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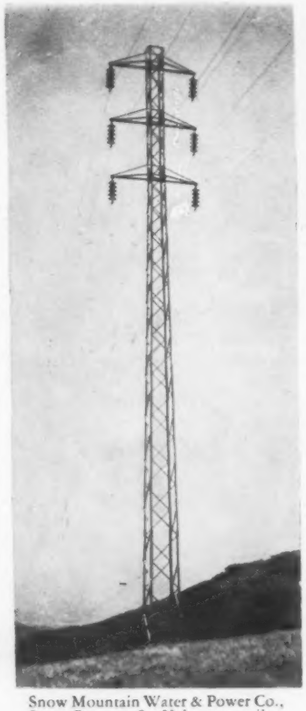

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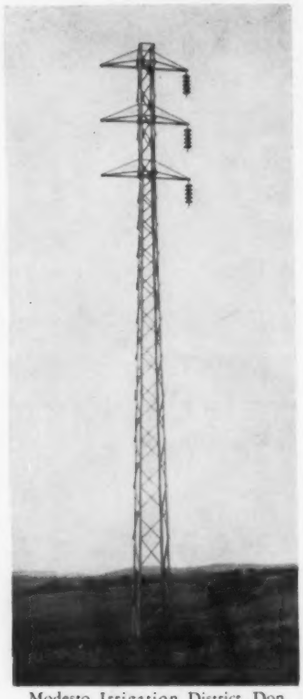

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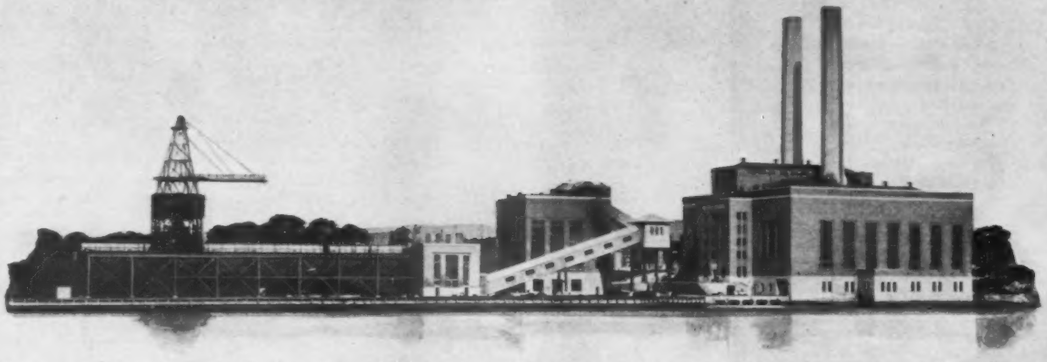

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ENGINEERING CORPORATION

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Light's Jubilee Dedicates New Era at 1929 P.C.E.A. Convention

LIGHT—physical expression of energy in its most potent and useful form in the life and affairs of man,—and vision—man's human sensitive equipment whereby he is enabled to function under, appreciate and utilize light—these two held complete sway at the thirteenth annual convention of the Pacific Coast Electrical Association, Del Monte, Calif., June 19-22, 1929. In celebration of "Light's Golden Jubilee," the fiftieth anniversary of the invention of the incandescent electric lamp by Thomas Alva Edison, it was no more than appropriate that light, and its human counterpart, vision, should have played so all important a role.

Even in the most decided innovation of the convention, the talking moving picture, it was light which not only brought distant and famous personages to the screen to appear before the gathering, but it was a tiny beam of light playing along the "sound track" of the films on which they appeared which, when translated electrically into sound, brought their voices to speak to the convention.

Developing an idea given first expression at last year's notable convention at Pasadena, this year's convention went even farther in dramatizing, animating and making visual every feature of its program. Playlets told in facsimiles of every-day situations the problems the electrical industry faces and how its people meet them. Moving pictures brought the personalities of notable men into the presence of a record attendance. They brought, for the first time, their voices as well as their persons. Pictures and charts added visual emphasis to the spoken word.

E. B. CRIDDLE
Vice-president and general agent, The Southern Sierras Power Company, who was elected president of the Pacific Coast Electrical Association at the convention.

And never before at similar conventions have such stirring messages been given by national leaders as at this gathering. J. F. Owens, vice-president of the N.E.L.A., and Paul Clapp, managing director, in their talks to the convention laid new emphasis upon the human values involved in the industry's affairs. They told how individuals, by their attitude and actions create the good or bad repute in which a company is held. In the face of unjust and malicious criticism from a press which has distorted half truths and insinuated corruptness of entire power company policies on the basis of the silly mistakes and disgruntled remarks of a few individuals, these leaders called attention to the devotion to duty and the honesty of the great majority in the industry whose purposes are sincere and whose record of public service and community good works is unquestioned. To these loyal workers they gave renewed courage to carry on in spite of attempts to discredit the industry. By its good works, they asked, let the industry be known.

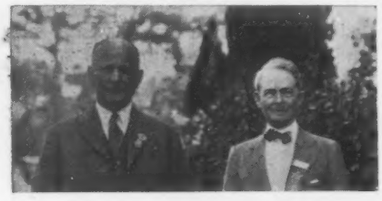
As to the program itself, again it is a difficult task to single out from so many features of interest and value those entitled to special mention. Even without the stimulous of an official contest between sections for the most notable program presentation, such as that held last year, the resulting program demonstarted that each section in spirit sought to improve it's previous efforts and present this year an even more important contribution to the program than before. This year the competition was with last year's record. President P. M. Downing, with this dramatic *crescendo* closed a year of record achievement for the association while General Convention Chairman R. R. Cowles set a new high standard for those who undertake convention plans in the future. When the tally was taken at the close of the convention 585 people had registered.

In the pages which follow the individual units of the convention program are reviewed and appraised. With these reports before them as a notebook carefully compiled, those who were fortunate enough to attend the convention may follow out the request expressed by President-elect E. B. Criddle in his acceptance speech. His was a plea that association members take back into the organization from which they came the good work, the findings and the inspiration which they received in committee and section meetings and at the convention.

Tribute to Edison in President's Annual Report Opening Convention

PRESIDENT Paul M. Downing, in his annual address presented at the general session Wednesday morning, reviewed the progress of the industry in the Pacific Coast geographic division during the past year and pointed out some of the most significant trends and tendencies. In keeping with the general spirit of the convention, he paid high tribute to Thomas A. Edison when he said:

"Within the space of a single lifetime we have seen conditions under



Presidential—Paul Downing, on the eve of turning over his office to E. B. Criddle.

which we live completely revolutionized and in that transition electricity has played a most important part. It is only 50 years ago since Thomas A. Edison, through remarkable changes in the field of research and invention, demonstrated the possibility of producing light by passing a current of electricity through a carbonized filament of cotton enclosed within a vacuum."

Summarizing the growth of the industry, he pointed out that generation of electricity had increased 50 per cent during the past five years. He stated that in 1900 each American worker directed 2.11 hp. and that by 1925 this had increased to 4.27 hp. Seventy-five per cent of all American factories are electrified, he declared, as against only 66 per cent of those in Germany and only 28 per cent of those in England. Since 1912 the population of the United States has increased 25 per cent but the amount of electricity produced has increased 615 per cent, and the number of consumers 510 per cent. President Downing stated that one of the healthiest and most gratifying improvements during recent years has been the increase in economy of steam-electric stations. In 1928 the amount of energy generated by the use of fuel was 5.5 per cent greater than it was in 1927, but the amount of fuel consumed was only 1.1 per cent greater. He stated:

"So great has been the improvement in steam plant efficiency that hydro-electric power is no longer the predominant factor in the electrical industry it is generally supposed to be. Those enthusiasts who maintain that the economic salvation of the country can be found only in water power and that it will meet all of the country's requirements for heat as well as for light and power, do not yet fully realize that water power is fast becoming a political issue rather than a business one."

Discussing recent trends, President Downing said: "Along with other progressive industries, public utilities have demonstrated the soundness of the theory that the best business policy is one based on small, individual profits, made possible through large volumes of business. In carrying out this policy they have, within a comparatively few years, grown to the point where they are today—the world's largest business enterprises.

"Utilities have been criticized because many of them have consolidated and made a comparatively large corporation out of what were formerly numerous small companies. The bigger a thing is the more conspicuous it becomes. It is not surprising, therefore, that large utilities and other corporations should become targets for the criticism of those who think that because a thing is large it is necessarily a menace. The trutn of the matter is that those consolidations have linked up isolated plants that were earning little and rendering mediocre service, into great interconnected systems which have cut down overhead expenses, improved service, earned reasonable but not excessive dividends for millions of customer owners, and at the same time reduced rates."

President Downing declared that a good part of the progress and success of the industry has been made in the face of opposition; such success as it has attained, he stated, has been the result of intensive technical research and experiment along with aggressive advertising and salesmanship on the part of both manufacturers and the power companies.

Speaking of the Federal Trade Commission investigation, President Downing stated that it is unnecessary to say the industry as a whole has nothing to fear from this investigation, but invites and will welcome any proper and bona fide non-political fact-finding investigation of matters involving public interest, however far reaching they may be.

Secretary Urges Western Section Conclaves

Recommending closer co-operation between the three geographic divisions of the National Electric Light Association in the eleven Western states, Samuel H. Taylor, secretary of the Pacific Coast Electrical Association, urged that joint conclaves of the Engineering and Commercial Sections of these divisions be held at least once a year, preferably in some city so located as to be accessible to all three. He suggested that rather than send so many delegates to meetings of the various national sections and committees in the East, the chairmen of these committees be invited to attend the joint conclaves here on the Pacific Coast.

Mr. Taylor also reported that the number of worth-while publications being prepared and printed by the various committees of the association was now so great that it was his recommendation that a publications committee be appointed to handle these reports so that they might be given even wider distribution than is the case at the present time. He cited the agricultural power sales handbook and the electric heating manual as instances, stating that requests for both of these publications had been received from all over the United States.

Reporting as chairman of the membership committee, Mr. Taylor stated that the membership of the association had now crossed the 3,000 mark.

Criddle Elected President; Names New Chairmen

E. B. Criddle, vice-president and general agent, The Southern Sierras Power Company, Riverside, was elected president of the Pacific Coast Electrical Association for the forthcoming year at the general session Wednesday morning. A. M. Frost, general commercial manager, Great Western Power Company and San Joaquin Light & Power Corporation, was elected first vice-president, and A. B. Day, president, Los Angeles Gas and Electric Corporation, was elected second vice-president for the year. N. R. Sutherland, Pacific Gas and Electric Company, was re-elected to the office of treasurer.

Happy Day—A. B. Day, the newest in vice-presidents, gets secretarial advice from Sam Taylor.

The newly elected executive committee of the association consists of the following: P. M. Downing, Pacific Gas and Electric Company, San Francisco; D. E. Harris, Pacific States Electric Company, San Francisco; S. E. Gates, General Electric Company, Los Angeles; W. R. Marshall, Westinghouse Electric & Manufacturing Company, San Francisco; R. E. Fisher, Pacific Gas and Electric Company, San Francisco; W. L. Frost, Southern California Edison Company, Los Angeles; A. E.

Holloway, San Diego Consolidated Gas & Electric Company, San Diego; Max Pooler, Tucson Gas, Electric Light & Power Company, Tucson, Ariz.; E. C. Pike, Wagner Electric Company, San Francisco; R. A. Sharon, Great Western Power Company, San Francisco; Miles F. Steele, Benjamin Electric Manufacturing Company, San Francisco; and C. T. Hutchinson, McGraw-Hill Company of California.

The new executive committee held a meeting before the convention adjourned and outlined the plans for the forthcoming year.

Chairmen and vice-chairmen of all sections of the association also were announced by President Criddle before the convention adjourned. During the forthcoming year the following men will be in charge of the various activities of the association:

Public policy committee: R. H. Ballard, president, Southern California Edison Company.

Public Relations Section: P. M. Downing, vice-president, Pacific Gas and Electric Company, chairman.

Engineering Section: Fred L. George, Pacific Gas and Electric Company, chairman; R. H. Halpenny, The Southern Sierras Power Company, vice-chairman.

Commercial Section: George T. Bigelow, The Southern Sierras Power Company, chairman; E. G. Stahl, San Joaquin Light & Power Corporation, vice-chairman.

Accounting Section: P. R. Ferguson, The Southern Sierras Power Company, chairman; A. B. Carpenter, San Joaquin Light & Power Corporation, vice-chairman.

Purchasing and Stores Section: S. E. Hickman, San Joaquin Light & Power Corporation, chairman; William de Waard, San Diego Consolidated Gas & Electric Company, vice-chairman.

Advertising-Publicity Section: F. Z. Stone, The Southern Sierras Power Company, chairman; George C. Tenney, Electrical West, vice-chairman.

Conventional—Roy Cowles, general convention chairman, and Tommy Thompson, in charge of all entertainment, and how!

Insurance committee: Clifton Peters, Southern California Edison Company, chairman; Herbert Dewes, The Southern Sierras Power Company, vice-chairman.

Transportation Section: C. D. Weiss, San Diego Consolidated Gas & Electric Company, chairman; E. C. Wood, Pacific Gas and Electric Company, vice-chairman.

"Sales or Rates Must Go Up" Says Sloan

Not able to be present at the convention in person, M. S. Sloan, newly elected president of the National Electric Light Association, gave the convention a stirring message in a movietone film. Reviewing developments of the past five years, he declared the industry is faced with one of two things: either a sales increase or a rate increase.

He pointed out that the industry is being squeezed between the jaws of a pair of pinchers, one jaw being a decline in the kilowatt-hour sales and revenue for each dollar of investment, and the other jaw being a rising investment per kilowatt of installed generating capacity. In support of his arguments he pointed to the following statistics:

"In 1922 there were sold 7.54 kw.-hr. for each dollar invested in plant and equipment. In 1927 this figure dropped 6.61 kw.-hr., a decrease of 12.5 per cent.

"The average price of a kw.-hr. sold in 1922 was 2.81 cents, while in 1927 it was 2.71 cents, a decrease of 3½ per cent.

"The revenue for the dollar investment in 1922 was 21.1 cents. In 1927 it had decreased to 17.9 cents, or 15 per cent.

"The 1922 rate of capital turnover was once in 4.72 years. In 1927 it was once in 5.5 years, or 18 per cent longer.

"In this period from 1922 to 1927 the installed generating capacity increased 28 per cent. The average generation per kilowatt installed increased 4 per cent. The investment per kilowatt installed increased from $312 to $367, or 17½ per cent."

President Sloan said these figures show first, that the average rate at which a kilowatt is sold to the ultimate user is just about stabilized—with the tendency downward, however; second, the trend of revenue in relation to the dollar of investment is distinctly downward; third, the time of capital turnover is markedly lengthening; fourth, the investment per kilowatt of installed generating capacity is increasing; fifth, the return on the investment has been approximately stablized since 1922.

On the strength of this showing he pointed out that the question arises, "Shall we increase our sales or our rates?" The answer to this question is that the industry must sell more kilowatt hours for each dollar of investment, making its equipment work harder and more steadily. He stated that the place to sell more service, in his judgment, is in the home. He declared:

"Domestic sales should be vigorously stimulated for several reasons. The first is that they are and always will remain the backbone of our business. Industrial uses of electricity, and, to a somewhat less extent, commercial use, will fluctuate with the state of the business health of the country. There is very little fluctuation in domestic use of our service. Household habits become fixed. A household accustomed to the convenience and value of electricity will curtail its use only after the direst necessity.

"Another reason is that domestic business is highly desirable business. Once the customer is beyond the point of use which pays for the fixed expenses of serving him, the chief expense incurred by the company furnishing additional kilowatt-hours is that of generating the energy. Moreover, increased domestic load is an important element in improving the company's load factor.

"The laugh's on you," said N. B. Hinson as he slipped the engineering chairmanship to Fred George.

"The third reason is that the customer who makes the largest use of service is, in all human probability, the best satisfied customer. We seek to improve our relations with the public by furnishing information about our business, by public speaking, by advertising.

"A fourth reason is that we have a social duty to increase the domestic use of electricity. Electric utilities are not alone business enterprises. They are also organizations for public service. They obtain their franchises on that basis. With them they acquire certain responsibilities. One of these responsibilities, as I see it, is to do everything possible to make their service most widely useful to the public.

Talking Movies Bring Edison to the Convention

Thomas A. Edison, inventor of the incandescent lamp, gave a message to the convention from his home in Fort Launderdale, Florida, through the means of the movietone film at the general session Wednesday. Mr. Edison reviewed some of the difficulties of his early experiments, traced the steps that led to the ultimate perfection of the incandescent lamp and the Edison system of distribution. He said:

"It is a great reward for me and my colleagues and co-workers, many of them still living, that we have survived to see the fruits of our labor. The record is wonderful, but fine as it is, it can be made still better and I have a feeling that in your hands it will be."

English Economist in Talking Film Debunks Government Ownership

APPEARING before the first general session on Wednesday, Ernest Benn, of London, England, noted economist and publisher, through the medium of the movietone film addressed the convention on the subject of "The Superiority of Private Enterprise." Part of his succinct and devastating remarks follow:

"The property problem, the question as to whether wealth or property should belong to the individual or the community, has been discussed and debated ever since the days when public affairs first became the subject of thought and conversation. Plato advocated the public ownership of property and for 20 centuries people who were not so well off as they would like to be have argued that there was something wrong with private ownership.

"The argument still goes on today and yet the vast bulk of all the property in the world is still in private hands. We are asked to believe that the whole world has been wrong through all the ages and that there is a better way—the way of public ownership. It wants some courage, in the face of the accumulated experience of mankind, to carry on this old argument; but socialists and revolutionaries make up in courage what they lack in brains.

"When property consisted almost entirely of land and cattle and natural products there was sufficient of a case for public ownership, but today, when property and wealth are 95 per cent brains and 5 per cent nature, public ownership is the road to the end of our civilization.

"Before wealth or property can be owned it has to be made, and nobody will suggest that society can make anything. The making of wealth is beyond any question the exclusive function of the individual. The best society or community or state, from the economic point of view, is the one which has amongst it the greatest amount of wealth.

"The best public policy, therefore, is that which will encourage the making of maximum wealth.

"Public authority can own but it cannot make. It only owns what it can extract by force from the individual who does the making. Public ownership, therefore, acts as a discouragement to those invaluable citizens who are by nature makers of wealth; it encourages the incompetents, the parasites, the passengers, the incapables and the pauper-minded.

"I have said that before you can own wealth or property, it must be made, but there is a third consideration—it must be cared for, preserved, maintained and guarded from depreciation.

"The public authority which has confiscated—for all taxation is confiscation—which has confiscated wealth, values it so lightly and cares so little for it, that it will throw it away on the slightest provocation. The world is littered with the ruins of public works that have been discarded.

"The civilization of each generation through the whole of history has rested upon the private property made, owned and cared for, by the previous generation. There is no exception to this universal and age-old experience.

"On the other hand, each generation has been handicapped with the debts of its forefathers represented only by the blunders of public ownership.

"The private individual tends always to acquire wealth—real wealth—which remains in the community for its comfort. No community has ever acquired anything worth mentioning but debts—the opposite of wealth.

"The property in the hands of public authorities today is not worth more than 5 per cent of the amount of the debts of the same authorities.

"That, after all, is quite natural, when we remember that it is nobody's business to look after public property.

"The argument therefore boils down to this: The economically perfect society wants the maximum of wealth—houses, railways, electricity plants, steamships, machines, and numbers of other things. All experience shows that the private individual through private ownership is the only agent that can be trusted with these things. He makes them, cares for them, and he passes them on, free of debt, to the next generation.

"Can there, then, be a shred of doubt in the mind of any reasonable man that the public good, the well-being of society, the advancement of civilization, the raising of the standard of life of the people, and all the highest and the best of economic aims can only be secured by a firm adherence to the principles of private ownership?"

Stirring Message on Human Values Brought by National Vice-President Owens

THAT the industry may obtain public confidence with lower and simpler rates and with an honest and sincere policy of fact telling, was the message brought to the convention by J. F. Owens, vice-president and general manager of the Oklahoma Gas & Electric Company, and vice-president of the National Electric Light Association. He paid high tribute to the industry in California for the initiation of the customer-ownership movement.

Declaring that there is an interrelationship between every man, woman and company in the industry, he pointed out that the present attempts that are being made to hold the industry up to scorn for the acts of a few would not be possible if the industry had a close feeling of inter-dependence. He stated that every man and woman should feel a thrill in the knowledge that they have had a part in the social and industrial revolution brought about by electricity. He urged that in considering its past progress the industry should not assume a feeling of self-satisfaction and smugness, when as a matter of fact the industry, for all its progress, is only in its infancy.

From N.E.L.A.—Vice-President Jim Owens from Oklahoma and Fred Herbert from national headquarters.

Mr. Owens stated that to the public the employees of the light and power companies are the interpreters of the business. He pointed out that the industry will stand or fall in the degree to which the employees enjoy the confidence of the people with whom they come in daily contact. Speaking on the broad subject of public relations, he said:

"After all, it is not enough that we conduct our business with honesty of purpose, with an unselfish desire first of all to give the full measure of service, but that our customers must know and feel within their inner being that we are honest. In short, they must believe in us.

"It follows then that in the conduct of our business we have a two-fold duty. First, realizing that to us has been delegated a service of great importance in the industrial, social and economic life of the community, we must be ever ready to give a full and free account of our steawardship. The public has the right to demand of us information that will enable it better to understand our business as it is. It is therefore not only our right but our duty to utilize every avenue generally employed in the transmission of information to the end that the public may know us as we know ourselves to be. Of course, it goes without saying that the essence of all information transmitted must be facts—facts that will stand the white light of research.

"Second, it is our duty in the public interest to controvert the misinformation and mis-statements about our business. Believing as we do that America has reached its high pinnacle of prosperity through the principle of encouraging and rewarding individual initiative and enterprise—believing as we do that any paternalistic system must tend to stifle individual effort and to submerge genius, hope and ambition, it is not only our right, but our duty to meet arguments in support of such fallacious theories with facts.

Mr. Owens left a stirring message with the convention when he said:

"Men and women of the electric light and power industry, yours is the happy privilege to be associated in a business which during a brief space of 40 years has been a most important factor, if not the most important in the remolding of society and the reforming of civilization.

"While this is a privilege, with it goes a tremendous responsibility.

"Upon the proper discharge of this responsibility by you as individuals rests the stability and the lasting prosperity of our business.

"We need have no fear of the attacks of those who would undermine the present social order if we are right.

"Being right, we need have no hesitancy in supporting our position with facts.

"The men and women with whom you are associated know and judge the industry by you. It is your duty to be informed; it is your duty so to conduct yourself that knowing you, meeting you in their everyday life, those with whom you contact cannot help but realize that you are the sort of man or woman who would not stoop to anything dishonorable. The old-fashioned virtues of honesty, straightforwardness, square-dealing, are today as they ever were, the best guideposts to permanent success."

In conclusion, he pointed out that the most important jobs of the industry at the present time were, first, a study of its rate structures to see that they were both right and simple; second, to tell its story in facts to every employee and to the public; and third, to obtain the confidence of the public by deserving it.

"More Light" Made Keynote of the Convention

In the role of keynote speaker at the first convention luncheon, Paul F. Cadman, economist, now associated with Leib, Keyston & Company, delivered an inspiring address to crystalize the spirit of the convention. During the course of his address Mr. Cadman said:

"The most dramatic tale that industry has ever written is the story that traces the results of the invention of the incandescent lamp, to the fiftieth anniversary of which this convention is dedicated. From the sickly yellow glow of the original carbon filament, burning pale and uncertain under the constant pressure of the vacuum pumps, to the

More publicity—George Oxley, of the N.E.L.A., asks Emory Wishon how Al Joy gets that way.

lighting miracles of 1929, in a span of only half a century! Out of that discovery there has come a basic industry that literally supports the whole superstructure of modern applied mechanics.

"What a kind stroke of Fate that the friendly soul of Thomas A. Edison should have been spared to see the fulfillment of an industry which he could scarcely have conceived when his invention was born . . . . . May you find in the search for higher efficiency the challenge of the old vision that guided the creating, contriving genius of Thomas Edison.

One of the greatest philosophers of all time, Goethe, passed into the Great Beyond with these words on his lips, 'More light.' Having penetrated deeper into the realm of thought than the average man may hope to go, his dying request was that he might see further into the mysteries of this strange thing which we call Life. You, too, came here seeking for light on this industry of which you are, perchance or by choice, a vital part. Light on invention; light on production; light on distribution; light on financing; light on the operation of your particular task, however important or humble that may be. Into your various sessions must come the searching spirit of inquiry and out of it will come the inspiration and improvement which was the cause of your meeting."

Advertising Men Organize for N.E.L.A. Next Year

Confined to a reading of the report of the chairman, Al C. Joy, and discussion of the work for next year's section, the Advertising-Publicity Section parallel session on Wednesday afternoon was very short.

In his report Mr. Joy reviewed the activities of the section for the year, including its contributions to the convention and section meetings of other association groups at joint conclaves.

Preparation for the N.E.L.A. convention publicity work was also discussed.

First-Aid Demonstration at Women's Meeting

Development of first-aid work and reports from the chairmen of the various company committees constituted the basis of discussion at the parallel session of the women's committee on Wednesday afternoon, presided over by Mrs. Ruth E. Creveling, chairman.

The development of first-aid work in this geographic division was reported on by Miss Marge Myrick, Pacific Coast member of the national safety subcommittee. The team from the Salinas division, Pacific Gas and Electric Company, staged a demonstration of two first-aid problems.

Progress of home service work in this territory was reported on by Miss Ella Lehr, home service member of the committee. Miss Lehr stressed the value of having every member an auxiliary home service worker, capable of supplementing the home service director's efforts through a well balanced knowledge of the usage and economics of electrical appliances.

Reports on their respective group activities were also made by the following chairmen: Miss Mildred Hinrichs, Salinas division, Pacific Gas and Electric Company; Miss Jessica Taylor, Los Angeles Gas and Electric Corporation; Miss Wilma Jones, Arizona Edison Company, Bisbee; Mrs. Nyra Letchworth, San Joaquin Light & Power Corporation, Fresno; Mrs. Jean Roberts, Tucson Gas, Electric Light & Power Company, Tucson; Mrs. Bertha Briggs, Coast Counties Gas & Electric Company, Santa Cruz; and Mrs. Jeannette Rees, Southern California Edison Company.

Mrs. Phyllis H. Vauchelet, Southern California Edison Company, winner of the first prize in the recent women's committee essay contest, was introduced and congratulated.

Pollard Checks Up on Year's Commercial Work

Pointing to the Agricultural Power Sales Handbook, the Electric Air Heating Manual and the essay contest as three of the outstanding accomplishments of the Commercial Section during the past year, J. F. Pollard, chairman of the section, reviewed the year's commercial progress of the industry in California at the general session of the section Wednesday afternoon. In setting forth the policy of the section Mr. Pollard said:

"The policy of the Commercial Section during the administrative year just closed has been to undertake only such activities as could be better done by the member companies in co-operation than as individual units, bearing in mind that the commercial function is solely to produce more business and more

profitable business for the central stations. This may be done, first, by adding new load to the line; second, by encouraging continuous and greater use of current-consuming devices already on the line; third, through the interchange of ideas and experiences by actual contact among the commercial men in conclaves assembled, and finally, at all times using the commercial departments as public contacts to earn and cherish public good will."

Two national activities in which the Commercial Section of the Pacific Coast Electrical Association should co-operate during the forthcoming year, Mr. Pollard stated, are the National Food Preservation Week to be held in September, and the Light's Golden Jubilee celebration. He urged that commercial departments of the power companies and electrical dealers in this territory tie in with both of these movements.

"Four Out of Five Factories Haven't It"

Paying a high tribute to Thomas A. Edison, H. N. Crawford, sales manager, Pacific Gas & Electric Company, outlined the plans for Light's Golden Jubilee at the meeting of the Commercial Section Wednesday afternoon. In urging that the electric light and power companies assume the responsibility of leadership in this movement Mr. Crawford outlined some of the steps that are to be taken in celebrating the jubilee during the summer and fall months.

He emphasized the importance of light by pointing out that four out of every five factories are insufficiently illuminated, that seven out of every ten stores need better illumination, and that nine out of every ten offices are poorly lighted. He stated that over 50 per cent of the central station revenue comes from the lighting load and that any steps that are taken to increase this load will mean much in the way of gross and net revenue. He declared that in the past the public has come to the industry for its lighting and that the time has now arrived for the industry to go out and sell better illumination.

Urges Study of Humans in Sales and Display

Urging that the same study of human nature be applied in the merchandising of electrical appliances as is applied in the department and chain stores, A. Edwin Fein, lecturer on advertising and marketing at New York Universtity and president of Sparklets, Inc., addressed the Commercial Section at its meeting Wednesday afternoon on the subject of "Psychological Merchandising."

Mr. Fein pointed out several of the psychological arguments that would apply in the purchase of an electric refrigerator or an electric range, namely self-preservation, protection of family, pride, friendship, hospitality, pleasure, and appetite.

He showed how every effort is made to attract an audience in both department store and chain store; how this audience is made to feel at ease, how efforts are made subtly to direct the attention of the audience to the merchandise to be sold and to lead the audience up to actual buying.

He called attention to some of the display methods used by department stores in displaying their merchandise, and urged that the electrical industry follow the same tactics. He said, "Sell your customer what she wants, including personnel, product and service, and there will be an enduring sense of pride and satisfaction for all concerned."

Lesson on Line Loading in Arizona's "Cactus Line" Methods

NEW ideas in load-building and merchandising were presented to the Commercial Section by A. F. Morairty, assistant general manager, Central Arizona Light & Power Company, Phoenix, in a talk illustrated with charts and cartoons at its meeting Wednesday afternoon.

Mr. Morairty's talk was based upon the experiences of his company. He pointed out that the company had 15,000 residential customers of whom 1,000, having electric ranges, used an average of 2,500 kw.-hr. per year, the remaining 14,000 customers using an average of but 420 kw.-hr. per year. On the basis of an average of 5,000 kw.-hr. per year per customer for electric service that includes a range, water heater, refrigerator, lights and small appliances, he estimates that there is available additional new business from residential load in his territory of 32,500,000 kw.-hr. per year or 75 per cent of the total present sales to all classes of consumers. His company's commercial program is based upon the premise that every home should have a range, water heater and refrigerator. The company endeavors to see that every new home constructed is wired for these appliances. All selling is based upon a policy of merchandising the group idea. Customers may purchase major appliances individually but are urged to purchase range, water heater and refrigerator as a unit and special terms are granted for purchases so made.

Farm relief—Jim Pollard, chairman Commercial Section, wishes Prof. H. B. Walker more power for the farmer.

Particular emphasis is laid upon loading new line extensions to the fullest possible extent. Where in the past it has been customary to request advances from consumers covering the cost of new line extension construction, the policy has now been adopted of permitting the customer to invest in electrical appliances the amount that would ordinarily be required for such construction. No deposit is then required. In cases where customers have made extension deposits in the past and have a refund coming to them, salesmen call and state that the refund will be made immediately provided the money is used in the purchase of new appliances.

The complete electrical home idea is also sold to all new subdividers. A refund of one-half the allowance for an electric range and water heater is made to the subdivider for every home that is provided with range and water heater wiring. Full allowance is made to him if all appliances are sold with the house. He is also provided with an advertising allowance for his tract provided all homes in the tract are wired for complete electrical service.

Salesmen are divided into two classes: those selling heavy-duty equipment and those selling the smaller appliances. Compensation is on a salary and commission basis for both groups. Senior salesmen are concentrated on the heavy-duty load-building appliances. By having each salesman sell three appliances his load factor is improved, his income more steady and he is more satisfied.

Employee campaigns are conducted each year on cookers, lamps, percolators, toasters and waffle irons. All employees who sell appliances during this campaign are paid a special commission.

Gross merchandise sales have increased from nothing at the beginning of 1925 to approximately $400,000 for the twelve months ending May 1, 1929. At the same time average kilowatt-hour sales per year per customer have increased from 297 in September, 1924, to 520 on May 1, 1929.

Diesel Engine Competition and Public Relations

Stressing various phases of Diesel engine competition, W. K. Chawner, sales engineer, The Southern Sierras Power Company, Riverside, at the meeting of the Commercial Section Wednesday afternoon, outlined some of the steps that can be taken to overcome this competition. Mr. Chawner urged that in cases where Diesel engine competition develops, an individual study be made of every angle of the case in an endeavor to prove that central station service will be better and more economical in the long run.

In considering a given case Mr. Chawner pointed out that the first item to be studied is the legality of the contract that may exist between power company and consumer or the contract that is offered by the engine manufacturer to the consumer.

The next step to be given consideration is the proposed plan of financing the Diesel engine purchase. He stated that some of the methods employed are the issuance of 20-year bonds with no amortization during the first five years, particularly in the case of a municipality. This is done, he stated, in the face of depreciation records which show that the engine has a life of but from five to ten years, depending upon the kind of service. In some instances contracts are entered into where the engine is to be paid for out of savings, with no guarantee of what the savings shall consist of.

In estimating the cost of electricity generated by a Diesel engine installation, he pointed out the various factors which must be taken into consideration. The first is the initial cost of the investment. Under operating costs there are constants based upon each kilowatt-hour produced which consist of fuel, water, oil, lubricating oil, supplies and repairs. Then there are such variable annual operating costs as include attendance. He pointed out that the attention of the consumer should be called to the item of overhead which is frequently overlooked by the engine salesman. He stated that overhead is ordinarily variable with load factor and showed a chart which had been prepared to show the extent of the variation.

In discussing Mr. Chawner's paper, E. G. Stahl, sales manager, San Joaquin Light & Power Corporation, presented some of the arguments used by salesmen in his company in combating Diesel engine competition. He pointed out that in 1928 over 700 gas engines were taken out and replaced by electric motors on his company's system. He further stated that despite the fact that natural gas and oil are available at practically no cost, the oil companies operating in the old fields in his territory are rapidly electrifying all of their properties.

H. C. McFadden, Southern California Edison Company, in further discussion of Mr. Chawner's address, stated that in his opinion the Diesel engine installations that were made on the lines of the central station companies are directly traceable to poor public relations in the majority of instances. He pointed out several cases in which such installations had been made in his territory where public relations were a factor in the final choice of power.

He urged that great care be taken in all dealings with industrials that might be possible prospects for Diesel installations to see that proper contacts are maintained and that good public relations exist at all times.

Advantages of A.C. Distribution Network Extolled by Eminent Engineer

SPEAKING before the Wednesday afternoon session of the Engineering Section, D. K. Blake, of the General Electric Company, Schenectady, New York, forcibly emphasized the economic and operating advantages of the low-voltage a.c. network to meet system demands imposed by increasing load densities. He pointed out that it is a present-day engineering belief that this a.c. network system is the only economical means of providing for load growth and an increase in operating reliability. This secondary network is more economical because it permits the use of higher distribution voltages such as 11, 13 or 26 kv., thus eliminating the usual substation with transformer and switching equipment.

Up and coming—Bill Fleming, of Southern Sierras, who won second award in the Red Seal essay contest, and his boss, the coming Commercial Section chairman, George Bigelow.

Comparing the network with existing methods, the speaker said in part: "The existing methods provide preferred and emergency equipment for the large consumers quickly restoring electric service to them in the event of a feeder failure, but resulting at best in a momentary power interruption and sometimes in appreciable outages. The network system in the event of feeder or transformer failure provides uninterrupted service to the small consnumer as well as to the large one.

"The consumer receives additional advantages besides increased reliability, such as safety, simplicity, greater efficiency in floor space, and improved motor efficiency. Safety because high voltage equipment is omitted and the cables are connected directly through the transformer pothead. Simplicity because four conductors instead of seven are required to balance lighting load and certain motors may be started direct on the line without starting compensators. Efficiency in floor space because high voltage equipment is omitted and basement floor space is valued as high as $300 per square foot by some department stores. Improved motor efficiency because a large percentage of motors operate at less than 70 per cent load, and, consequently, their losses will be reduced."

"It is most important for companies operating underground systems to become familiar with network system problems and advantages so that they may begin network installation at the proper time. If this is not done progress will have been made along other less economical lines to such an extent that it is difficult subsequently to adopt the network system. The moment it becomes economical to use the network system all new loads should be taken only that way. Such practices as primary metering should be discontinued at once where they do not fit with the network system, which requires secondary metering. The addition to existing substations or the building of new ones with their distribution circuits should not be made until it is determined by actual study that the network system will not be more economical . . .

"No definite statements can be made as to the load density necessary to justify the nework system, but due to the rapid growth in load some companies are able to begin at densities as low as 1,000 kw. per sq. mile. Many companies find it easy to begin with densities around 4,000 kw. per sq. mile.

"It is not generally recognized that the network program can be started in a very simple manner such as with a single new building requiring from 150 kw. up. When two or more such buildings occur close enough together street mains may then be installed and connected to serve also the small consumers between. Street vaults with transformers and network protectors then can be installed to carry the small loads as they increase. There are many cities where there are small areas with several large buildings, a moving picture theater and stores relatively close together. In such areas small networks may be formed and supplied at 11 or 13 kv."

Metal-Clad Switchgear Introduces New Era

"A new era in switchgear practice has opened recently with the introduction of fabricated steel construction," stated A. W. Copley, of the Westinghouse Electric & Manufacturing Company, as he addressed the Engineering Section Wednesday afternoon on the subject, "Metal-Clad Switchgear." The speaker traced briefly the history of the development of switchboards and related power control equipment from the early all-wooden construction down through the modern all-steel construction.

"The new practice which utilizes truck-type equipment, metal cells, metal switchboards, and in effect, metal substations, has grown up co-incidentally with the growing use of structural steel in all electrical equipment. Many of the advantages of structural steel are due to the development of electric arc welding.

"Breakers mounted on trucks in such a way that breaker units may easily be taken out of their cells and removed for inspection and repair give a greater degree of safety and convenience than is obtained by breakers mounted in the older fashion. The use of grounded steel cells simplifies building construction, gives a more flexible arrangement and reduces hazards, permits the complete assembly of cells and related equipment in the manufacturer's plant, and makes the installation expense of such equipment almost negligible when compared with the old construction. . . . . This form of construction also provides a very convenient means of obtaining a simple wiring scheme for the board."

Mr. Copley illustrated his discussion with lantern slides showing some of the latest developments in modern switching equipment.

Transportation Problems Discussed

The session of the Transportation Section held at Del Monte Wednesday afternoon was devoted entirely to completion of some of the section's committee reports and section business. C. D. Weiss, San Diego Consolidated Gas & Electric Company, was named as chairman of the 1929-30 term, E. C. Wood, of the Pacific Gas and Electric Company, as vice-chairman, and W. E. Frazer, as secretary.

Among the technical subjects occupying the time and discussion of the section were, "Standard Title Classification for Transportation Department Employees," "The Care of Pneumatic Tires," "Practices in Providing Car and Truck Tools," and "Problems of the Fleet Operator in Purchasing Automotive Equipment." These subjects all elicited a very general discussion and comparison among the members present of the policies involved and a comparison of the practices adhered to by the various companies represented.

Among the subjects recommended for study by the Transportation Section during the coming year were: (1) Proper time for replacing automotive equipment; (2) study of manpower requirements for maintaining a given number of vehicles; (3) amount and type of repair work "farmed out" by the various utilities, such as cylinder reboring; (4) ways and means of improving the appearance of public utility motor equipment.

Air—Ed Wood, who furnished such superb transportation to and from Monterey, tells Al Strong it will be airplanes next year.

Standardized and Controlled Materials Aimed At

Material control methods and a progress report on the work of the section toward material standardization featured an interesting parallel session meeting of the Purchasing and Stores Section, Wednesday afternoon. William Maddock, chairman, first read a report of the section's work showing its activities to come under classifications as follows: Purchasing department organization and policies, stores organization, stores facilities, inventories and pricings, material control, salvage, and standardization and simplification of stock.

This report was followed by the reading of a paper by H. O. McKee on "Material Control."

Significant statements made in the paper were: "Large stocks are usually caused by a natural but unreasonable demand of the user. His justification is that labor or equipment should not be delayed awaiting material. This is easily understood since the user's primary responsibility is that of operation, but he fails to realize that surplus stocks are also very costly, not only in capital investments, but also in deterioration and obsolescence, and often exceed the small loss incurred through delay in getting materials.

"Material control might be summed up as meaning: Having material on hand when wanted in quantities to meet requirements but not in quantities to meet the desire of the user."

G. M. Richardson, chairman of the committee on standardization and simplification, next reported. This important work was shown to be divided among five committees each of which had made marked progress. Efforts are being made to secure greater standardization of pole-line hardware, insulators, packages, a simplified invoice form, and catalogs.

In one report it was shown that in pole-line material alone 45 instances were found where there was not a single item standard with all of the ten major companies reporting. Copies of the proposed standard catalog size and standard invoice forms were passed around for examination.

A suggestion was made by Mr. Richardson that the section accept an offer recently made by the Department of Commerce to make a survey of materials used and subject to standardization and to call a conference for the purpose of making a simplified practice recommendation on pole-line hardware. The enlistment of the support of the Engineering Section for a coordinated study was recommended. Many indications were given that the task of standardization of materials will form a major activity of the section in its next year's work.

Accounting Section Discusses Equipment and Methods

A group meeting of the Accounting Section held on Wednesday afternoon was enlivened by various discussions dealing particularly with bookkeeping machines and methods of handling "accounts payable." The session was presided over by H. T. Terry, of the Pacific Gas and Electric Company, chairman of the section.

Accounting statistics were dealt with and a paper was read by W. C. F. West who outlined their construction and their importance to the efficient management of a utility business. Merchandising sales accounting was discussed by J. A. Cannon. Inasmuch as this particular subject was treated rather completely in the report of the stores department organization committee of the Purchasing and Stores Section and published on pp. 492-494 in the May 15 Convention Extra issue of Electrical West, Mr. Cannon presented no paper on this subject at the convention.

"General Records" was the subject of a paper presented by A. B. Carpenter, who discussed internal auditing, inventory methods, and the subject of accounts payable. Mr. Carpenter discussed also methods of handling invoices, outlining a rather elaborate system used by his company. Bookkeeping machines were also discussed by him.

F. E. Oldis presented a paper on "Customers' Billing," which presentation

showed that by using billing machines an increased clerical efficiency was obtained that enabled a given clerk to handle a greater number of meter accounts. Mr. Oldis stated also that it was possible to go through a vacation period without requiring additional help. In the opinion of this speaker billing machines are practical for companies having more than 125,000 customers.

Accounting in connection with construction was the subject of a paper presented by C. C. May. This report was one carried over from last year at which time each company was asked to answer a number of questions. In preparing the report of the committee this year a composite answer was prepared for each of the questions. Mr. May read portions of this paper which, it is expected, will be printed later. It was suggested that the approval of the California Railroad Commission be obtained on the matters dealt with in the report.

Aladdin's Lamp Outdone in Lighting "Magic"

"Magic!" exlaimed J. F. Owens in his memorable address. "Who will say that this is not magic greater than any ever performed by Aladdin and his Wonderful Lamp?"

And so indeed seemed many of the spectacular lighting events at this convention.

Immediately following the supper hour on Wednesday evening the president's reception was held in the lounge of the hotel and immediately thereafter the entire convention adjourned to the grounds of the hotel there to witness a bit of magic indeed. The townspeople of Monterey and the peninsula from many miles around had come also to witness a spectacle of elaborate floodlighting switched on by the sound of an airplane propeller flying overhead.

On its first trip over the hotel the large Standard Oil Company airplane, piloted by Bernard Doolin, with its colored wing and tail lights sweeping across a moonlit sky, merely circled over the grounds. It returned again after a few minutes, again merely to circle the grounds and to key all present to a height of expectancy for its third and significant return.

On its third trip over the grounds its motors quickened their revolutions and the plane swept down within 100 feet of the tower of the hotel like the fabled "roc" of "Sinbad the Sailor." As it swept over the tower the pitch of the note sounded by the propellers set vibrating a sensitive reed tuned to that frequency which in turn closed a contact on a relay and in the flash of a second the entire grounds and buildings were flooded with multi-colored light.

A battery of seven floodlights bathed the large oak trees surrounding the hotel in a soft white light. Between the hotel and its Roman plunge a huge evergreen was covered with yellow lights like some single colored Christmas tree. The swimming pool itself was flooded with light which pierced to the bottom of its clear waters. The sunken gardens about the hotel were bathed in white light which brought out all the colorings in the flowers of its formal landscaping.

But the building itself was transformed from its cream colored stucco to a changing kaleidescope of color. In the tower mobile color changes were being made constantly by a new simple device designed by William Wuelker and called by him his "multi-kolor changer," a device without motors or dimmers. Up the columns of the front of the building floodlights were trained with screens of various colors to make contrast against the general lighting of the entire structure. Hidden behind shrubbery at the side of the building were a number of amber and purple floodlights which gave a background for individually floodlighted green trees in a Maxfield Parrish effect.

Out in front of the hotel a General Electric airway beacon of 8,000,000 beam candlepower circled and flashed, its beam playing against the trees in the surrounding gardens.

This floodlighting was made possible through the co-operation of the General Electric Company, the Westinghouse Electric & Manufacturing Company, Crouse-Hinds Company, Wuelker Baby White Kitten Lamp Company, Bethlehem Steel Corporation and the Pacific Gas and Electric Company, all of whom lent their equipment.

The lighting of the grounds was under the direction of Walter Carlson, chairman of the lighting bureau, Commercial Section. It was planned chiefly by Frank Bevan and Clark Baker, and installed by W. P. Bear, W. J. Crabbe, Monterey district manager, Ray Conlisk and B. N. Perrins, all of whom worked night and day to make the lighting of the program, which was its dominating feature, successful and smooth in operation.

Pacific Coast Progress in Steam Power Plants

Graphically presenting in a non-technical way the story of the steam-electric generating plant and its remarkable development of the past decade, F. R. Knight, of the Los Angeles Gas and Electric Corporation, spoke for the Engineering Section at the Thursday morning general session. The speaker outlined the influence of the World War upon industrial efficiency and mechanical development, emphasizing the valuable lessons learned in economy. The three obvious channels of effort toward improvement were: to increase the general efficiency of equipment, to develop and use cheaper fuel, and to reduce installation costs.

The speaker extolled the valuable contributions of the great industrial research laboratories, not only to the advancement of steam-electric generating equipment, but also in other important fields.

In speaking further of increased efficiencies, Mr. Knight called attention to the present-day accomplished fact of 800-deg. F. steam, with perhaps 900- or 1,000-deg. steam in the near future, and mentioned also that steam-electric plants operating at 1,200 lb. per sq.in. boiler pressure no longer are a novelty, but an accomplished fact. Heat losses common in older plants have been greatly reduced. The temperature of exhaust gases in the stack of a modern plant are so low that exhaust fans are required, and the heat formerly wasted in the condensers now goes very largely

Jubilee—Hotel and grounds were lighted as if by magic from an airplane. At left, the front entrance, in mobile color, with its airway beacon at the center. The next two pictures taken from the same spot show the hotel gardens by day and as painted with light each night.

to pre-heat boiler feed water and to heat liquid fuels where they are used.

Touching also upon the matter of developments which have made possible the use of cheaper and low-grade fuel and upon design improvements which have resulted in some remarkable economies in floor space requirement, Mr. Knight came to the human side of the picture as represented in the modern steam-electric generating plants. He said in part:

"While engineers were building bigger and better plants they did not lose sight of the comforts and safety of their operating men. Modern steam plants have grown into monuments of architectural beauty containing all of the finish and convenience of a modern office building. Clean, cheerful surroundings have resulted in the better health and keener minds of its personnel and have lifted the operating force out of the old rut. . . . They no longer are content to do; they want to know the 'why.' They are eager for an understanding of the scientific and mathematical principles of equipment under their care. This means more efficient workers, better public relations, and certainly reflects itself in the earnings of the organization."

A Laboratory Experiment by Photophone

Most effectively was the entire audience attending the Thursday afternoon general session transported, in spirit at least, from the convention auditorium at Del Monte to the research laboratory of the General Electric Company at Schenectady, N. Y. So effective was the photophone moving picture demonstration featuring Dr. Irving Langmuir and his assistant, that it was hard indeed to realize that one was not seated on the edge of Dr. Langmuir's desk listening to a personal explanation of the wonders and possibilities of electric arc welding when done with the assistance of a jet of atomic hydrogen. Dr. Langmuir explained briefly some of the research activities in the development of the modern incandescent lamp and how as one of the by-products of this research some of the properties of dissociated hydrogen gas had come to be understood. The observers saw on the screen the performance of many different electric welding experiments wherein the welding operation was greatly assisted by twin jets of atomic hydrogen gas which combine with the electric arc to produce an effective welding temperature and which at the same time obviate completely all possibility of oxidation. Not only does the use of atomic hydrogen greatly facilitate the control of a given welding job, but also it makes possible the welding of aluminum and other metals where oxidation occurring with other means of welding has been a serious deterrent.

Another advantage of the new type of welding is the fact that no metal is added to the welded joint, the weld being accomplished simply by fusing together with absolutely no oxidation the two or more pieces of metal. Dr. Langmuir pointed out emphatically that the method of welding with the use of atomic hydrogen gas does not replace present forms of welding which serve their purposes very well, but rather opens up that new field for successful welding.

"Keep the Customers Smiling"

A character out of radio stepped onto the stage to entertain the convention delegates Thursday morning in a playlet, "Keep the Customers Smiling." The skit was presented by the Advertising-Publicity Section and was declared by Al C. Joy, chairman of that section, to be merely a bit of diversion in the serious program of the morning. It was more than that however, amusing as it proved to be.

Eddie Holden, better known as Frank Watanabe, of K.F.R.C., impersonated his well known radio Japanese character in the act of applying for "'lectlicity for light." Frank Jones, as the power company salesman, made the best of his opportunities, for when Watanabe, bicycle and garden tools rode into his office, he proceeded to get him signed up for range, washing machine, lighting and power, and sold him a milking machine. What if he thought that the range would replace his worn-out wife, the washing machine do all the cleaning, the milking machine do away with his cows, and the horsepower motors with his horses, he was kept smiling throughout the transaction by the salesman who knew his public relations!

That the smile was a permanent fixture on the Watanabe countenance, and the contract meant nothing at all, he did not learn until another irate customer, impersonated by Cecile Porte, vented her wrath over radio interference upon them both.

It would be hard to draw a lesson from this amusing and cleverly enacted skit. But then Al Joy openly declared its purpose as that which it served, namely as an entertaining burlesque of a situation very familiar in the sales office of a company.

"Mr. Kilowatt-Hour and the Farmer"

"The future of the industrial progress of our nation is dependent upon the creation of stable markets for our products. We are interested in consumers and potential consumers. The present widespread interest in the welfare of the nation's agriculture is not altogether an altruistic interest. The nation is interested in farming primarily because in its present condition it presents a barrier to the even flow of commercial progress. The potential purchasing capacity of that 24 per cent of our national population that is dependent upon the production of agricultural products is justly attracted to related industries." Thus spoke H. B. Walker, professor of agricultural engineering, at the University of California, in addressing the Thursday morning general session under the auspices of the power and heating bureau of the Commercial Section.

The speaker made the foregoing statement after having outlined something of the development of agriculture as a true industry and had given something of its history and the characteristics of the people engaged in argricultural pursuits. Professor Walker roughly classed the total farming population into two groups, one of which he characterized as the "leader farmers," including the aggressive intelligent farmer who recognizes new opportunities for financial returns through improved cultural practices and good management. The second group he classified as "trailer farmers," including all of those farmers who follow tradition rather than modern developments. "From the standpoint of agricultural development it is evident that our future progress lies with that group which is capable of aggressive leadership and sound management."

"It is perhaps a little difficult for executives of electric companies to see the economic importance of extending electric service to agriculture, particularly in areas where the demand for other commercial services is brisk. Farm service, however, is more fundamental than immediate direct returns, important as these may be in any business transaction. Electrical service to agriculture means much in perpetuation of the existing reorganization tendencies in farming; that is, the development of a more specialized industry based upon good management and sound business principles. To deny our rural leadership the advantages of this convenient and basic service can have no other than a discouraging effect on the aggressive leaders in the industry."

That a very close relationship exists between the health of agricultural endeavor in this nation and the well-being of other industrial enterprises was emphasized by the speaker throughout his address.

Three-Minute Men and Women Urge "Use It Yourself"

Happy it's over—The three-minute gladiators, after the forensic sweepstakes in the dining room. *Left to right*: Gene Holtcamp, Howard Sullivan, W. K. Chawner, Raymond Watts, Helen McMillan, winner second prize, Marie O'Houlahan, James Barrington, winner first prize, and W. M. Fisher, winner last year.

EIGHT speakers, representing as many companies, stood before the microphone, each for three minutes, at the noon luncheon Thursday, and in a spirited and sincere presentation told the industry why, in the matter of electrical appliances and uses, those in the industry should "use it yourself."

The meeting was presided over by Al C. Joy, chairman of the Advertising-Publicity Section. Mr. Joy explained that this feature of the convention had been sponsored by the Advertising-Publicity Section for three successive years and that the number of speakers this year was the largest since the plan was put into operation.

The speakers were James Barrington, Coast Counties Gas & Electric Company, and winner of first prize; Miss Helen McMillan, Southern California Edison Company, winner of second prize; Miss Marie O'Houlahan, Great Western Power Company; Howard Sullivan, San Joaquin Light & Power Corporation; Gene Holtcamp, Pacific Gas and Electric Company; W. M. Fisher, Los Angeles Gas and Electric Corporation; Raymond Watts, San Diego Consolidated Gas & Electric Company; and W. K. Chawner, The Southern Sierras Power Company.

The judges for the contest were George F. Oxley, director of publicity, N.E.L.A., New York City, R. M. Dorton, city manager, Monterey, Calif., Allen Griffin, publisher, Peninsula Daily Herald, Monterey; Elmer T. Bromley, attorney, Los Angeles; and Frederick R. Beckdolt, author, Carmel.

For the two winning speeches prizes were: first, a share of stock in any utility company to the value of $100, and second, a trophy valued at $25. The prize winning speeches, for lack of space in this convention report issue, have been held over and will be printed in a subsequent issue of Electrical West.

Although women have participated in contests for the past two years, Miss McMillan is the first to win a prize in any three-minute speaking contest so far.

California Water Supply and Byproduct Power

Byproduct hydro-electric power was defined by Harold K. Fox in addressing the Thursday afternoon general session as being electric energy produced by generating plants built in connection with projects, the major aim of which was water storage for irrigation supply, domestic use, control or related purposes. Mr. Fox pointed out that the advent of municipal ownership and operation of electric power systems started with byproduct power resulting from a water supply development.

In emphasizing the importance of giving consideration to the economic and operating problems involved in absorbing large blocks of byproduct power the speaker said in part: "Water is even more essential than electricity and its development for municipal supply and irrigation use ever will be an active problem in California and such development invariably will carry a certain amount of byproduct hydro-electric energy." He explained that the two problems facing the electric utilities are the determination of the economic value of byproduct power and the determination of methods by which the absorption of blocks of byproduct power can be accommodated without seriously interfering with their own construction programs.

Lamplighters—the hard working artists who made the jubilee golden and brilliant. *Back row*: Teddy Bear and Clark Baker. *Front*: Frank Bevan, Bill Crabbe, Walter Carlson and B. N. Perrins. Ray Conlisk was still busy somewhere else.

In speaking of the value of byproduct power, Mr. Fox said: "This is a much debated subject. It has possibilities of many ramifications and diversities of opinion and there is much misunderstanding by the public. Due to its varied nature as a byproduct it often is an unreliable source of energy. In other words, the release of water through the power plant is determined by the demand for water for municipal or irrigation use rather than by the demand for electric energy.

"It usually is equated against the cost of steam generation in determining its value and properly is divided into two classifications, namely, primary and secondary power. The primary is assured power, just as reliable and available as steam capacity of equal amount and therefore worth the same price at the load center but not at the power house. Invariably the output would be purchased at the hydro-electric generating plant and transmitted over private lines for varying distances. Therefore the value at no two plants is alike because transmission costs are large items varying directly with the distance.

"Secondary power is worth a little less than the value of fuel it will save in a steam plant since it can be used only by shutting down units that will generate assured power."

The speaker presented a most illuminating display of charts and diagrams, depicting graphically the various water development possibilities in the State of California.

Modern Trend Is Toward Automatic Equipment

S. J. Lisberger, of the Pacific Gas and Electric Company, representing the Engineering Section, spoke at the Thursday morning general session upon the topic, "The Automatic Idea." He defined the principle of the automatic idea as "the operation of any machine or system of machines, the mechanical parts of which are so correlated and interconnected that the mechanism as a whole performs its normal cycle without the constant aid of the hand of man."

The development of modern mechanical and electrical equipment, together with the application of the automatic or self-operating idea, was sketched by Mr. Lisberger, who pointed out how deeply into the ordinary routine of life these mechanical devices had crept without really being recognized in their true light. All the way from automatic toasters and automatic electric water heaters to the automatic substation and automatic electric generating plant, the self-operating principle is utilized again and again.

Motion Picture Depicts Operation of Network

A graphic presentation of the operation of a metropolitan electric distribution network in the form of a motion picture film especially prepared by the Westinghouse Electric & Manufacturing Company under the direction of P. B. Garrett, was presented at the Thursday morning general session as one of the contributions of the Engineering Section.

With most of the scenes laid on the system of the Pacific Gas and Electric Company, this animated motion picture gave some idea in a non-technical way of the economies and advantages to be realized through the use of an a.c. distribution network in the place of the systems more commonly employed now.

Good company—in his foursome Doc Holloway, in the sweater, winner of low net, Class B, had Fresno Jack Frost, first vice-president P.C.E.A., George Bailey, and N. H. Callard.

Joe McGee, Salesman, Teaches Lesson

"Ain't Selling Tough!"—a playlet adapted for the electric range by William Cyr and George Tenney from a refrigeration playlet, "Selling Is Sure a Tough Job," prepared and presented by the Frigidaire Sales Corporation at its series of regional conventions—was given under the direction of Henry C. Rice, chairman of the merchandising bureau of the Commercial Section at the Thursday afternoon general session.

With a message applicable to the selling of any electrical appliance (written in reverse English) this playlet demonstrated practically all the wrong things that a salesman could do in his contacts with a customer.

The playlet was divided into two acts. The first depicted the service department of the Western California Light and Power Corporation in which were received numerous and varying complaints from customers. This portion of the playlet showed the service manager capable and courteous in the handling of service and trouble calls. It showed also the helpless position of the service department when the appliance had not been properly sold to the consumer. Finally, in disgust, the service manager visualized just what happened when a salesman is making his call.

The second act depicted the service manager's idea of just what transpired in the home of the prospect when the salesman came to the door to make a sale. Running the entire gamut of faux pas, from giving the wrong name to the prospect, to every sort of discourtesy, including the reading of a prepared, stilted sales talk, breaking of a vase, discouraging the use of the appliance, and ending up by taking the prospect's fountain pen, Roy J. Regnier enacted the dumb salesman, "Joe McGee," to perfection. Miss Georgia Fifield, who as "Mrs. Jones," a customer, determined to have an electric range in spite of everything, proved an excellent foil to the blundering Joe McGee.

This playlet, presented by a professional cast, proved to be a highly amusing incident in the afternoon program.

Today's Sales Strategy Requires Keen Advertising Application

FROM that day when primitive man traded a shiny stone for a dried fish to the present time, when we exchange 300 shiny dollars for an electric refrigerator, the fundamentals of merchandising have not changed. Like everything else, they have undergone a process of evolution; that which once was simple is now complex; that which once was crude is now refined. But the basic idea remains the same—we give that which we have for that which we want." So declared Richard E. Smith, advertising manager, Southern California Edison Company, in beginning his analytical talk, "The Place of Advertising in the New Sales Strategy," at the Thursday afternoon general session.

Mr. Smith pointed out that certain definite milestones had been passed in the history of man. Likewise in merchandising was this true.

"A definite step was taken when John Wanamaker abandoned hieroglyphics and adopted the method of **one price**, plainly marked in figures which every customer might read. Another step was taken when the mail-order house sold the goods by accurate specifications, with the **guarantee** that if the article did not meet its specifications, it might be returned and the price refunded. Still another important step was taken when typewriter and sewing machine salesmen gave **demonstrations** of their wares on the prospect's premises. Still further progress was made when the department manager of a big store became a **buyer** so that his assistants might be better sellers. Then Woolworth put all of his goods on the counter, where they might be **examined** and sold with a minimum of explanation. Thousands of merchants have followed the example of the United Cigar Stores, who adopted the policy of **fresh goods, quick sales**, small profits, and the convenience of the customer. Another monument was established when national distributors, like Heinz and National Biscuit Company established **depots** at convenient points for quick service to dealers.

"Perhaps the greatest step of all was the adoption of **advertising**, or education, to create an understanding and acceptance for a new idea, even before that idea was presented in tangible form."

At this point he demonstrated that the strategy must be changed to meet new conditions. He then took the analysis of merchandise made by Roy Durstine in which he divided merchandise into three groups: "known and wanted," "half-known and half-wanted," and "unknown and unwanted."

"Make a note of this. The first step in modern sales strategy is to recognize into which pigeon hole the merchandise should be placed. Is it 'known and wanted,' like Arrow collars and Mazda lamps? Is it 'half-known and half-wanted,' like radios and the vacuum cleaner? Or is it 'unknown and unwanted' like motor boats and electric heaters?"

After making the first point—that **analysis** was the first requisite to modern strategy—he placed next in importance the **selection** of the proper group to which advertising should be directed. The third and very important point was **concentration**, which he illustrated by recalling to mind how a person acted in the face of the most important interview he ever had.

The next point he made was that certain **classes** of merchandise sold more quickly than others.

"Here is another factor in the new sales strategy that we must recognize. The spending of an amount as large as $300 or even $100 is a major undertaking for the typical American family, and not more than one, or at most two such expenditures are made during the year. Hence the importance of continuous advertising so that the desire for our product will be built up as the money which may be used in its purchase is accumulated.

"If only one major purchase is made during the year, can't you see how essential it is to utilize the golden moment when it occurs? This golden moment cannot be forecast like an eclipse. It is not something that arrives on schedule like an overland train. There is only one thing to do, and that is to be constantly **on the ground**, either by personal solicitation or by

advertising, so that our message will never become cold."

Another point to be remembered, he pointed out, was that people now shopped for **quality and style** as well as price. "The electrical industry as a whole has been somewhat slow to comprehend this, and many electrical salesmen are still handicapped by the inferiority complex. We have suffered from the bugaboo of price consciousness.

The place of advertising in this strategy he then pointed out. "The purpose of advertising is to focus attention on what you have to sell long enough for an impression to be registered on the consumer's mind. Then by constant repetition the impression is deepened until that which at first was hazy becomes a clear-cut desire." Mr. Smith closed his talk with a plea for appreciation of the technique of advertising and the right kind of support for the advertising department.

"Advertising, like salesmanship, also has its new techniques. If your advertising man is the right sort, he is keeping abreast of the times and is making use of new tools as their value is proved. Do not hamper him by interfering with its technique—if he is using type or artwork which impresses you as being gaudy, just pause for a moment and consider those gay pajamas bought last week, and realize that there is a style in everything, and that styles change. If he asks for $750 to get out some stuffers, either accept his recommendation or refuse it—but do not suggest that he try to do the same work for $350. If he takes some time off occasionally in search of new ideas, be lenient with him, realizing that ideas are his stock in trade. Do not put him in the position of a Mexican army endeavoring to carry on a campaign without ammunition.

"We cannot conduct the electrical business in 1929 with the equipment of 1919. We do not hesitate to scrap a generator or a switchboard when we realize that it is obsolete. We spend thousands of dollars for new relays and other devices so that our facilities for serving the public may be strictly up-to-date. Is it also not fair to assume that in the commercial branch of our business there are old methods which should be abandoned in favor of new?"

A Glimpse at Future Lighting Intensities

Prophetic of the future was the touch given to the close of the Thursday afternoon general session by Clark Baker. His was a visual demonstration of the future of lighting intensities. The presentation, "What Intensity Vision?" was made for the Commercial Section by this originator and developer of lighting ideas.

The demonstration was simplicity itself. When Mr. Baker started talking about man's ability to see, showing that this important human sense depends upon the intensity of light, he told his audience that they were then under from 6 to 8 foot-candles of lighting intensity in the room. Asking his auditors to notice with what degree of ease they could read their programs, he kept on talking and as he did so the intensity of lighting in the room was stepped up gradually until the room seemed flooded with sunlight. Again he called attention to the ability of his audience to read the program under the new intensity and announced that they now were under 125 foot-candles, a degree of lighting intensity which in the future will not seem too great.

A dramatic touch was given to the event by the sudden turning off of the special units in the ceiling. The room was plunged back to the 6 or 8 foot-candle intensity. From this act it was not hard to realize likewise what a contrast exists between the average lighting of today and that of 50 years ago when the incandescent lamp was invented. Six or 8 foot-candle intensity today is considered excellent illumination for office and home. To plunge backward 50 years to the gloom of rooms which were lighted by the first lamp could not be more dramatic than this glimpse into the future of lighting as compared with that of today.

Winners—Emmet Jones, winner of low net in Class A; and M. A. Seeley, winner of first prize in the Red Seal essay contest.

This demonstration was made possible by an ingenious temporary installation between the ceiling and joists of the auditorium of 24 1,500-watt Wuelker Baby White Kitten aluminum reflectors, fitted with frosted gelatin screens, and suspended on wires. Mr. Wuelker had co-operated with Mr. Baker in the set-up of this arrangement, which included also the installation of dimmer equipment to bring up gradually additional light sources which at the climax consumed 50 watts per square-foot.

After Mr. Baker's demonstration, Victor Hartley, executive secretary, California Electrical Bureau, described the value of the new specifications for commercial lighting sponsored by that organization and urged the support and co-operation of all utilities, jobbers, manufacturers and contractors in promoting higher wiring standards for the greater intensities of illumination demanded today.

Golf Tournament Ends in Many Ties

Golf certainly proved itself a popular pastime during the Del Monte convention and this interest came to a head Friday afternoon upon the occasion of the annual golf tournament. Honors for low gross in Class A went to Emmet Jones, of Jones-Lyman Company, Los Angeles, with a score of 82. The Byllesby Cup went to C. T. Hutchinson, McGraw-Hill Company of California, with a net score of 67. Mr. Hutchinson and I. B. Adams, Pacific Gas and Electric Company, Chico, tied for low net in Class A and consequently tied for the Byllesby Cup as far as score was concerned. Mr. Hutchinson won the toss.

R. C. McFadden, of the Southern California Edison Company, won low gross honors in Class B with a score of 91, while honors for low net in Class B were split between A. E. Holloway of th San Diego Gas and Electric Company, and Ray Turnbull, Pacific Coast sales manager, Edison Electric Appliance Company, who both turned in net scores of 70.

The Pelton Cup and the Wholesalers' Central Station Cup both went to E. C. Johnson, Pacific Gas and Electric Company, Marysville, who turned in a gross score of 96 and a net of 66. J. H. Hunt, Pacific Gas and Electric Company, San Francisco, took low gross honors for Class C with a score of 85, while low net of course went to Mr. Johnson who took the cups just mentioned. Three ardent golfers, W. C. Smith, of the General Electric Company, A. G. Gage, of The Southern Sierras Power Company, and W. L. Winter, of the Westinghouse Electric & Manufacturing Company, San Francisco, tied for the kicker's handicap with a net score of 80. Messrs. Gage and Winter won the toss.

Educating the Public in Utility Economics

A. H. Markwart, of the Pacific Gas and Electric Company, opened the Friday morning general session speaking on the subject, "Co-operation With Educational Institutions." The Friday morning session was under the sponsorship of the public relations section and Mr. Markwart's talk sounded the keynote in stressing the importance of informing the public as to what it is that "makes the wheels go 'round" in a utility organization.

In presenting a brief report for the P.C.E.A. committee this speaker pointed out that activities during the past year had been limited to various conferences between utility representatives and educators through which it was learned that at present there is no effective arrangement for supplying authentic information on utility economics and

management to the various institutions of higher learning in this section. The speaker pointed out, however, that with the adoption of a definite, basic policy by the Public Relations National Section it should be possible within the next year to show a definite advance in this activity. Mr. Markwart said, in part:

"There seems to be no objection on the part of leaders of these modern socialists of the moderate type to the educational work of the electric light and power companies when it has to do with the technique of the business. Co-operation looking to education along commercial lines, engineering and even legal phases, and the things that the industry does to protect its physical structures and to maintain its service seem to pass muster. But any teaching which looks to protection against radical attacks upon the economic structure of the utility business is frowned upon.

"There is an opportunity for an economist to affirm in simple language our major economic philosophy and to set forth the peculiar laws of economics affecting the public utility business which are not present in other lines of private economic endeavor. These peculiar laws, such as the need for monopoly, the reason for sound regulation, the measurement of value for rate-making purposes and the difference between profit in ordinary business and wages to various classes of capital in the utility business, etc., are not covered in presentations on general economics.

"Women's place in the sun"—Ruth Creveling, chairman women's committee; Anna Steese Richardson, *Woman's Home Companion;* Isabell Davie, of the N.E.L.A.; and Mrs. P. M. Downing, first lady of the convention.

"It is well for the coming generation to be taught what is and has been best for an American; and there is a need for executives in the ever-growing utility business who have been trained along sound lines in economics, business, and civil government."

In closing his address Mr. Markwart said: "Let us have more light on the fundamentals of our business; and where could we obtain more light than from our institutions of learning?"

Newspaper Playlet Depicts How Facts Are Distorted to Make "First Page News"

"INSIDE stuff" is what Phil Colum, star reporter for the Daily Dynamite, looked to get when he came to see his old newspaper buddy, now director of publicity for the power company, to find out why money was being spent by the utility with the university for study of termites. Instead, Will Tellit, once radical newspaper man, too, but who now knew better because he knew what the utility he worked for was trying to do, showed him there was nothing sinister, nothing hidden in this work so necessary to the eradication of an insect pest which destroys millions of dollars' worth of wood poles and buildings each year.

Such is the main theme of "First Page News," a frank and outspoken one-act playlet written and acted by Al C. Joy and William A. Cyr and presented on the Public Relations program Friday morning as a contribution from the Advertising-Publicity Section.

The playlet opened with Tellit facing a publicity director's most disagreeable task, that of turning down politely a more or less blackmail demand for advertising support of one of the thousands of social and fraternal organizations which seek to "nick the power company for an ad" in a special program or edition. Into this scene comes Colum, sarcastic and radical, to accuse his old pal of surrender to "the interests" and incidentally drag an admission out of him that Prof. Read A. Lekchure of the university is being hired by the trust for no good purpose.

This situation becomes the basis for a spirited argument on the so-called revelations growing out of the Federal Trade Commission's investigation. To every accusation made by Colum his friend Tellit brings the facts out in the open and shows them in their true light. When Colum is unconvinced Tellit draws a parallel case in the newspaper game.

"Let's apply the same thought to the newspaper business. Suppose this excerpt from a recent magazine were to appear in a book on journalism:

"'The experience of Mussolini in Italy with the press leads to but one conclusion: that a press which is not rigidly regulated and censored by the government is a menace to the state and its policies. Everywhere the freedom of the press has been grossly abused. The theory of private ownership of the press is fast being supplanted by a more ideal one—that it is wasteful and contrary to a well ordered state to allow private exploitation of the channels of information, which should be owned and operated by the people themselves.'"

Half convinced, his pet theories somewhat shaken, his policy story knocked into a cocked hat because there is nothing scandalous in the true reasons for support of termite eradication, and with a little better appreciation of what demands are made on a power company for support of public movements, Colum leaves with a promise to see that justice is done on this one story—if he isn't ordered to do otherwise.

When the curtain drops on Tellit answering a telephone request for a speech before the high school assembly on "What Electricity Means to a Mother," a subject he makes clear he is hardly in position to elucidate, newsboys call out the latest edition of the Daily Dynamite, screaming across its first page, "Power Trust Buys Another Professor—Iniquitous Corporations Use Inoffensive Insect as Means of Corrupting Colleges and Placing Their Progapanda in Schools"—a signed story by Phil A. Colum.

Plan Extension of Women's Committee Activities

With a record of new committees formed and not only spectacular but practical work in first-aid instruction the women's committee of the Public Relations Section laid before the association on Friday morning a remarkable record of achievement and a number of excellent suggestions for the continued work in the future.

Ruth E. Creveling, chairman of the committee, in her report first mentioned the new committees formed during the past year at the Hawaiian Electric Company, Honolulu, and several in Arizona. She then went on to describe the first-aid work under which, directed by company safety engineers, two or three hundred girls have taken regular first-aid courses. In five of these groups first-aid teams were organized and participated in the recent California State Safety Meet in Los Angeles. The Los Angeles Gas and Electric Corporation girls' team won first prize, a trophy donated by the Pacific Coast Gas Association, and the resuscitation prize.

The practical value of this work was brought out quite dramatically when Mrs. Creveling introduced Alice Smith, captain of the first-aid team of the Southern California Edison Company, who, a few weeks ago, applied her newly acquired knowledge of first-aid to save a life. Mrs. Ralph Hitchcock, captain of the team of the Salinas division, Pacific Gas and Electric Company, was next introduced. Her team had given a demonstration at the women's committee meeting at the parallel session Wednesday afternoon. Miss Marge Myrick, of the San Diego Consolidated Gas & Electric Company, was next introduced as the Pacific Coast member of the safety subcommittee, National Electric Light Association.

"But our theme song for 1928-29," declared Mrs. Creveling, "has been electrical home-making." Beginning with the basic study of adequate house wiring the women's committees are learning about correct illumination, preservation of food, electric cookery, laundering and house-cleaning.

That this work should not be restricted solely to women in the electric utilities but should be extended to include women connected with electrical manufacturers, appliance stores, instructors in home economics, etc., was suggested as a program for the coming year.

Another proposed plan is the holding of a short course in electrical home-making in one of the California universities to which executives are asked to send as many of their women as they can possibly spare.

To give convincing proof of the effectiveness of women's committee work the N.E.L.A. women's committee playlet, "Before and After," was next presented by the Misses Dorothy Donahue and Marge Myrick. In this playlet a new girl with a company is brought to realize that courtesy, consideration, and an understanding of the company's purposes and policies are necessary, through the example and counsel of an older girl with the company who has been active in the women's committee work in her organization.

"Woman's Place Is in the Homemaking Departments of the Industry"

"WOMAN'S proper place in the social structure has been under discussion ever since Eve led that little procession of two from the Garden of Eden. Is it in the home? Try to keep her there! Has she found her niche in art or science? You will find her foot on the ladder. Is she a power in politics? Ask any candidate for office who has incurred the displeasure of a women's organization. Have business and the professions accepted her? Call the roll in your own office or store. Yet her status is not definitely fixed."

Thus did Anna Steese Richardson, director of the Good Citizenship Bureau of the Woman's Home Companion, open her address to the delegates of the Del Monte convention at the Friday morning general session. Speaking upon the subject, "The Business Woman Finds Her Place in the Sun," Mrs. Richardson spoke with frankness and authority upon this phase of the womankind problem.

That woman has a definite place in the home was recognized by the speaker, who also emphasized the fact that woman has a definite place in industry as well. Mrs. Richardson spoke fearlessly against the woman who invades a field for which men are better fitted by ability, training and inherent taste, and also cautioned the employer to be careful and thoughtful in placing women employees in activities for which they are fitted by sex, temperament and taste. She stated:

"All this is particularly true of the electrical industry. You do not need women to climb poles, string wires, make surveys or experiment in laboratories, but you do need them to make contacts with homemakers—today a most important group to reach in building up your load."

Speaking of the work of the women's committee and its individual members, Mrs. Richardson said: "Properly organized as home service groups they will give enormous impetus to your selling campaigns. In addition to their direct contact with consumers of power and light these women have the support of magazine editors who during the past few years have been preaching the gospel of less drudgery and more leisure for housewives, and of the women's organizations which are standing solidly behind the movement for better home equipment.

"The booklets issued by the women's committee, 'More Power in the Home,' are used as textbooks in thousands of women's clubs. The leaders and directors of your home service bureaus have made enviable places for themselves in various communities. They reach possible consumers of light and power through lectures on modern homemaking and through home economics departments in local newspapers."

She earnestly contended that woman in her proper business sphere is a most efficient co-operator, but that the electrical industry is just awakening to her possibilities. She said in closing, "Give them their place in the electrical industry and you will surely build up your load."

Red Seal Essays to Appear Later

THE two winning essays on "Why I Would Like to Own a Red Seal Home" were presented at the Friday morning general session, and following their reading, Ward C. Schafer, chairman of the general bureau of the Commercial Section, awarded the first and second prizes of $100 and $75, respectively. First place was won by M. A. Seeley of the Los Angeles Gas and Electric Corporation, while second honors went to W. S. Fleming, The Southern Sierras Power Company, Riverside, Calif.

The full text of both of these essays will be printed in a subsequent issue of Electrical West.

"Is Customer Ownership on the Decline?"

"Owing to a continued decline in the demand for capital to provide for any extraordinary expansion of utility properties, there has been a correspondingly diminished activity in the customer-ownership program," according to the report of the customer ownership committee of the Public Relations Section, as presented to the Friday morning session by F. E. Seaver, chairman of the committee. Omitting the usual statistics and tabulated data, the customer ownership committee during this past year conducted an inquiry into the progress of the customer ownership movement to determine its present condition and its trend. The committee has determined that most companies featuring widespread ownership of stock have experienced a loss in individual stockholders, due mainly to the cessation of sales activities.

In contrast to the expectations of eminent economists throughout the country as voiced when the customer ownership idea first came into prominence, Mr. Seaver pointed out that the problem now facing the proponents of this method of financing is the problem of maintaining a truly diversified holding of such securities.

Among the factors that have been determined as contributing to the resale of securities are loss of employment by installment purchasers, sickness, purchase of homes, purchase of automobiles, furniture, radio equipment, etc., speculation in securities having higher rates of return, and relinquishment of utility securities for other securities through influence of brokers and stock salesmen. According to the speaker the investigation did not reveal any lack of faith on the stockholders' part in the ability of the utility to pay dividends, but did reveal a tendency to attempt to secure a more lucrative return.

Reviewing eight of the more important fundamental reasons for the existence of customer ownership, Mr. Seaver pointed out that thus far the only expedient being used to counteract the movement away from true customer ownership has been that of continuing to sell stock or securities to the small investor in limited amounts. "The final analysis of the entire situation," he said, "should determine whether this reversal of the customer ownership movement be of sufficient importance to stimulate action on the part of utility managements to combat it."

Light Touches Banquet in Novel Ways

As in other portions of the convention program, lighting dominated the banquet and brought to it unusual beauty and novelty. With every delegate held at the door until 7:45 in order that the full effect of the lighting might be appreciated as he entered the banquet hall, a novel sight greeted his eye. Filing into a dining room whose lighting fixtures were dimmed to enhance the effect, the delegates found tables at which each plate was touched by light. Placed on the table at each plate was a fruit cocktail set in a small basin of ice. Underneath this ice two tiny colored lamps had been concealed, fed by a small battery. Through the ice and the fruit cocktail penetrated the gleams of this colored glow.

At each corner of the large dining room a tall palm was silhouetted against a basic floodlighted color. Directly in front of the palm sat a huge cake of ice carved to make a vase for flowers. Through this ice was projected a color complimentary to that on the wall behind it.

After the usual banquet formalities, such as a short address by the president, the awarding of the golf prizes, and entertainment numbers from a platform in the center of the room, the signal was given by President Downing and from the end of the hall was brought in a giant four-tier birthday cake upon which burned 50 candles. This cake had been fashioned by Clyde Chamblin, Electragist, and decorated by the hotel chef.

The ceremonials surrounding this cake, however, required that a group of "fairies of light" come and extinguish the candles on the cake as inappropriate in an electrical age. These candles they removed, revealing under them a new type of candle lamp which, at the touch of a wand were lighted.

Purchasers Check Up on Department Relations

Opening the last general session Saturday morning, A. M. Frost, first vice-president, acting as chairman for the meeting, called upon William Maddock, chairman, Purchasing and Stores Section, who read his paper, "The Purchasing and Stores Department Checks Up On Itself."

"Following the heavy construction periods of the past," Mr. Maddock said, "modern industry has called for a new type of service. It calls for a specialist who must have technical skill and an increased knowledge of the product he is working with. At the present time there is an assortment of every imaginable kind of material and apparatus, and we must separate the good from the bad. Above all, we must standardize. We must always be on the lookout for improved products, but we must be very sure that they are improved products and therefore we must do some engineering and experimental work to find which are good and which are not so good or perhaps inferior.

History of Light Told in Pageant

Portrayed by means of a series of dramatic pictures, "The Evolution of Light—a Narrative of Humanity" was presented in pageant form by the Lighting Bureau of the Commercial Section on Thursday evening in the auditorium. This ambitious and elaborate pageant was prepared and directed by Frank Bevan, of the Pacific Gas and Electric Company.

The first episode depicted "The Creation," symbolizing the birth of the stars, moon, sun and earth and the dawn of the first day at the holy injunction, "Let there be Light."

The second episode depicted the first cave dwellers touching off a spark which gave them fire and light. Following this came an episode depicting the feast of Belshazzar, lighted by crude saucer lamps and fire baskets, shaken in its wickedness by the handwriting in fire on the wall.

The next episode depicted Nero, at the time of the branched candlestick, burning Rome to see what a light it would make.

The next episode, during the reign of Henry IV of France, depicted a scene in a candle-lighted cathedral. Another episode—the first Thanksgiving in America, at the time of the Betty lamp—first brought America into the pageant. This was followed by an episode in Old Monterey, at the time of the Spanish fixture.

A particularly dramatic episode was provided in a scene showing Abraham Lincoln, whose day was that of the kerosene lamp. Next came the time of "the better light" when the first gas light was introduced. The last of the historic episodes depicted the "forty-fifth hour," that night when Edison was testing out the endurance powers of his first incondescent electric lamp. Following this a distribution of facsimiles of the Dec. 21, 1879, "New York Herald" was made in which was printed the account of the first lamp.

The program concluded with a procession of beautiful girls carrying replicas of lighting pieces from 3,000 B.C. to 1929.

Orchestration for the pageant was worked out by Phil Shapiro, director of the orchestra for the convention. The large cast was made up of people in the electrical industry in northern California.

"The personnel of the purchasing department must of necessity consist of business men. They come in contact with the salesmen who have developed human analysis to a great degree during the last few years and in order properly to perform the function of buying and not being sold, they must know the material thoroughly."

He went on to say that operating costs of the purchasing department, divided into the value of the year's purchases, amount to only eight-tenths of one per cent to a little better than one per cent. "When we can buy $100 worth of material at an average cost of $1, we are performing a complex task efficiently."

He next went on to show the importance of and the type of work necessary in the operation of a stores department. In the warehouse of a public utility, he said, will be found about 20,000 different items of material.

Human Side of Accounting Work Explained

"Men are more interesting than anything else," said John F. Forbes, of Haskins & Sells, in addressing the Saturday morning general session on behalf of the Accounting Section. Therefore, he said, he would not talk upon the technical phases of public utility accounting but rather upon the men who are responsible for the financial structures of their companies.

Mr. Forbes pointed out that each company has three forms of structures: the physical—which was in charge of its engineers; the legal—which had to do with its corporate form and its relation to the governmental bodies; and the financial—for which the accountant must be responsible. He then went on to describe some of the essential parts of this financial structure, saying significantly: "The old maxim that the essence of beauty lies in simplicity prevails in respect to accounts as well."

He then went on to enumerate something of the training and mental equipment that an accountant must take with him to his position, something of the attitude he must hold with respect to his own work and its relation to that of the company. The accountant is no more a bookkeeper, he pointed out, than is the architect a bricklayer. The accountant's art is a function of financial engineering, of executive management of finance, whereas the bookkeeper's is a manual art merely.

The true accountant, said Mr. Forbes, speaking of the human side of the profession, must keep himself informed on economics; he must be a mathematician, since the entire science of accounting is based upon the equation; he must learn to anticipate in terms of accurate figures the needs and the responsibilities of his company.

Song and Movie Tell of "Wheels"

Transportation's story at last year's convention was told so succesfully by means of an illustrated song that this year's committee returned with another such song and added to it a motion picture of human interest and humor and packed full of information. J. M. Wainscoat, chairman of the Transportation Section, in announcing the section's contribution to the Saturday morning general session gave credit to R. E. Kempton, of the San Joaquin Light & Power Corporation, for "Wheels —An Epic of Transportation," which formed the section's program.

The illustrated song, sung by J. G. Gilbert, of the Pacific Gas and Electric Company, to the tune of "There's a Long Long Trail," proved so ringing that the convention joined in the chorus at the end of each verse.

The moving picture which was shown next illustrated in motion that which had been told in the song. The first episode showed the hitching of the mule teams and the crossing of barren country by a large line crew to set new poles in 1900. The next episode (1910) showed one of the first trucks, but with a large crew still necessary to handle small poles, and mules often were necessary to drag the old car back to the garage at night.

The third episode (1920) showed the beginning of the use of heavier trucks, cranes for loading of poles, and more modern transportation equipment.

The last episode showed 1930's equipment—a small crew, a pole hole digger, crane-equipped trucks, loading facilities, and poles set by mobile field machinery in very short time.

Both the song and the scenario for the movie were written by Mr. Kempton. Daniel P. Quinlivan, assistant district foreman, San Joaquin Light & Power Corporation, Fresno, was in charge of properties and effects, his long experience and good memory serving him in good stead. Syd W. Green, of the advertising department, filmed the picture.

Paul Clapp Closes Convention in Stirring Appeal to Carry On

FIRST congratulating President Downing on the excellence of the convention and then the P.C.E.A. on its success in presenting its programs in such a way that those attending may get information and instruction in an interesting and entertaining manner, Paul S. Clapp, managing director, National Electric Light Association, then went on to review the progress of the electrical industry during the past year.

He urged more extensive and active participation in the committee work of the various associations and of the national committees. "I would urge the executive to encourage participation as a sure means of developing his organization."

Turning to the subject of the Federal Trade Commission investigation, he said, "I would be amiss if I did not commend the courageous, intelligent and vigorous manner in which you have maintained the bulwarks against aggression of those who advocate and practice municipal operation of electric utilities. In this very midst of the largest scale municipal operations in the country, you are proving to the American people by your performance in service, in rates and all the obligatives of public service, the soundness in the public interest of the principles for which we all contend."

"The Federal Trade Commission has not completed its analysis of the testimony and evidence. As yet it has come to no conclusion, and has issued no report of findings. The association and the utility companies have not presented evidence in their own behalf. It is expected an opportunity to do this will be afforded in September or October.

"The impressions which the public may have had growing out of the investigation are those based entirely on newspaper accounts, reported by Washington correspondents, as this mass of unanalyzed, unsifted and often unrelated material has been received by the commission, and by the wordings of headlines applied to these accounts as they appear in the local papers.

"The actions or correspondence of literally hundreds of individuals connected with utilities in varying positions of responsibility, and extending over a score of years, have been examined. An unwise or even silly action or letter on the part of any one of these individuals has often been the basis for the impression that such was the general policy of all utility companies in the country and had executive approval, when such is far from the fact.

"I would also point out that this investigation so far has been highly selective. The investigation so far has been confined to the publicity activities, as they relate to government ownership and operation. The broad work of the association and its geographic divisions in advancing the art or science of production and distribution of electric power has not been included in the evidence. Our work in standardization, rural electrification, accident protection, employee development, commercial stimulation, engineering and accounting advancement, and hundreds of other services in electrical development of great public value, have not been mentioned.

"The instigating force for this phase of the investigation clearly and unquestionably is those who favor government operation of electrical utilities."

He went on to say that the association takes full responsibility for information and data prepared by it. He then went on to point out the individual responsibility resting upon every person in the industry ending up with these words: "I cannot visualize the electrical utilities as huge power houses, miles of transmission lines, dams, wires and meters. Behind all these are human souls—270,000 of them—among whom we are numbered, who are giving their ability, loyalty, initiative, courage and heart to this job. Whatever interpretation and misinterpretation may be made, we must go forward with renewed courage, and renewed vigor, confident that time will make clear our aims, our accomplishments and our ideals."

Following Mr. Clapp's message the report of the committee on the president's report was read by W. L. Frost, chairman, who also paid a tribute to Mrs. Downing for her part in the success of the convention. The resolutions were read and adopted and President Downing, after again commending those whose work had made his association year and particularly the convention a success, turned over the badge of office to E. Z. Criddle, the new president. Mr. Criddle took occasion to pay a nice tribute to Mr. Downing for his accomplishments and asked for the same kind of support.

"The work accomplished during a convention is only dimly reflective of the work during the year by the conclaves and meetings of the association committees," he declared.

He continued on the theme that all of these facilities which have been in the process of erection for years now should deserve a fuller utilization than ever. "We have not yet begun to work," he declared and his slogan for the forthcoming year Mr. Criddle announced as, "More kilowatt-hours per customer," declaring that the sections had already been organized and were beginning to function.

He ended with a strong plea for the taking back into the organizations from which the members came of the good work which transpires at the convention and in section meetings. Only in this way, he said, can the good work which is accomplished pay its dividends. If the association is to continue to receive the financial backing of the companies contributing to it there must be more utilization of the findings of the committees in their deliberations.

Electrical West

C. T. HUTCHINSON, *Editorial Director*
G. C. TENNEY, *Managing Editor*

More Light

THE THIRTEENTH annual convention of the Pacific Coast Electrical Association is now history. Elsewhere in this issue appears the story of events that succeeded one another with a rapidity almost bewildering—a program replete with interest, in which art, the drama and industrial research vied with one another in presenting a story of progress that proved a revelation to those who were privileged to attend.

Inspired by the fiftieth anniversary of the invention of the incandescent lamp, "More Light" was the theme that underlay the entire occasion. And what is the significance of "More Light"? It is something that goes beyond mere foot-candles; it cannot be expressed in terms of lumens; it demands a greater enlightenment intellectually and ethically.

"More Light"—that is the intangible something that concerns the electrical industry today as never before. Gradually the utilities are coming out of their shells and taking a look at the great industrial and social world in which they play so important a part only to discover that there is nothing in this day of invention and progress in the sciences and arts that so greatly concerns the welfare of our people as electrical energy. So, it is to the leaders themselves that we must look for trail-blazing adventures through the forest of worn-out precedent, needless technicalities, public misunderstanding and unwieldy organization in order to mark the straight road to better service.

Rate structures are too technical, almost impossible for the layman to understand. Surely there is room for "More Light" on this situation. Simplification is a crying need. No greater service could be performed for the industry than the issuance of rates couched in such terms as would render the purchase of electrical service as simple and understandable as that of a dozen eggs at the grocer's.

There is the question of better public relations. "The public be told" is the keynote—not by the devious methods of the press agent who sneaks in by the back door as if he were engaged in something of which he is ashamed, but right out in the open in straight-forward fashion, by the men whose names carry weight and authority in the community and who bear their titles and designation with the pride and confidence of those who are doing a constructive work in serving their community.

And there is the home itself, at once the greatest existing field for the greater application of electric service, and the least understood. Here lies a great educational opportunity, and a chance of achieving the acme of public service. Domestic slavery practically eliminated, household drudgery at an end through the introduction of the electrical servant—that is a goal worth striving for. This problem is not one that can be solved by the house-to-house salesman working on commission. It is primarily one of public relations; it can be developed and solved through mass treatment in a broad institutional way, and in that way only. The salesman is merely an incident.

There is the internal problem, the problem within utility organizations themselves. Utilities have grown so great, so diffuse, so scattered that in many organizations there are hundreds of employees in positions of importance who have never even seen, much less talked with their executives. Work has been reduced to a treadmill of routine. There is lacking leadership and inspiration, and the finest type of leadership comes only through personal contact. How often do the high executives visit their district offices and meet the men whose labors they direct through mimeographed memoranda?

Industrial relations, relations with the other branches of the industry, the manufacturer, the wholesaler and the dealer,— what about them? Are the utilities realizing to the full the tremendous force of their good-will and co-operation, or are they pursuing a penny-pinching policy of entering into competition with them in their own field of endeavor and thus incurring their enmity instead of their support? These questions will have to be answered individually, but they are questions nevertheless, questions that cannot be begged. They must be answered.

"More Light"—that is the need of the hour, clear vision, self-examination, constructive criticism and, above all things, tolerance. The convention pointed out that the opportunity is here, and the men of the industry, individually and collectively, are big enough to meet it.

California Places Dams Under Strict Supervision

THE FAILURE of St. Francis Dam in 1928 did more than cause widespread destruction of life and property; it started machinery for new laws on dam supervision, aroused the public to a state of apprehension about dams in general, and impressed engineers and laymen alike with the potential danger of stored water.

As a result the California Legislature has passed and the governor has signed a measure placing all

dams in the state under the control and supervision of the department of public works, with the administration of the law in the hands of the state engineer. Authority for passage of the act was based on the police power of the legislature to protect lives and property.

Several sections of the new measure are worthy of note. In the first place, all dams built by municipalities, heretofore not subject to any supervision, are included. Dams owned by public utilities are removed from the jurisdiction of the State Railroad Commission and placed under the control of the state engineer. Provision is made for a survey and study of all dams in the state and these dams either are to be approved or recommendations are to be made embodying changes to comply with safety requirements. Plans for new dams and alterations to existing structures must receive approval before construction starts. Maintenance and operation of dams also come under the supervision of the state engineer.

Engineers and lawmakers co-operated in drafting the new California law. It is both an essential and logical piece of legislation and is a fairly close approach to what engineers consider to be fair and equitable.

Plan Local Celebrations for Light's Golden Jubilee

TO THE electrical industry falls the responsibility of leading in the plans for the celebration of Light's Golden Jubilee. If any given community is to commemorate the genius of Thomas A. Edison, it must have its own local celebration. Such a celebration entails plans, organization, finances, direction, and co-operation.

Dealers, power companies, wholesalers and manufacturers might well give consideration to some of the following methods of directing public attention to the service Edison performed when he founded the electrical industry. Buildings, fountains and parks may be floodlighted. Window displays may feature photographs of Edison, replicas of his first lamp, tributes to him. Radio may be employed. Prizes may be awarded in schools for essays on the life of Edison. Advertising may feature Edison and Light's Golden Jubilee. Where possible the co-operation of the municipality, the chamber of commerce and local service clubs might be secured in staging a pageant or parade, preferably on Oct. 21.

In any such celebration, however, effort must be expended. It is not too early now to begin to prepare for some fitting tribute in your community to the man whose inventions have done so much for American industry, American prosperity, and the comfort and convenience of the American home.

A New Opportunity From an Old Service

AN UNRECOGNIZED opportunity has developed for the electrical industry in the certification of home wiring through the medium of the Red Seal Plan. One of the most valuable attributes of the plan and that which is making the most converts among architects and builders is the inspection service it provides.

The fact that adequacy and good installation are practically guaranteed the builder by specifying and insisting upon Red Seal specifications is worth enough to builders to make many of them demand this seal of approval of wiring on every house and apartment they construct before the electrical work will be accepted.

The California Electrical Bureau has given real value to its set of wiring standards by insisting upon their exact application for approval of a job. A great many more Red Seal homes might have been listed if the inspection or the text of the plan had been lax, but Red Seal would not have meant anything then.

Now it means a definite quality in the building of a home—a certified job, passed as to its method of installation and satisfying demands of minimum adequacy.

Criminals Usually Shun the Light

MANY are the arguments that are advanced for the installation of decorative street lighting systems. Protection of citizens has been one of the minor ones that usually brought up the bottom of the list. It recently developed in Tokyo that this was the principal reason for lighting the residential districts of that city. The following is quoted from a recent number of *Denkinotomo*, Japanese electrical journal:

"Tokyo, capital of Japan, is crowned of late with unhonorable name of unsafe city owing to frequent visits of burglars, due in large measure to the deepest business depression and consequent unemployment. Suburban districts of Tokyo are especially haunted by these undesirable visitors of the night. Among the many measures taken to guard off the knights, the improvement in street lighting was considered the most effective and considerable strides were made along this line since the first appearance of the nocturnal guests."

Engineering Practice

Duplex Underground Constuction Solves Problem of Congested Streets

UNDERGROUND right-of-way difficulties on narrow streets have been overcome, in part at least, by the Los Angeles Gas and Electric Corporation through the construction of duplex duct lines. Between Figueroa and Main Sts. on Twelfth St. it became necessary to carry six 16-kv. transmission lines and several important distribution feeders along a narrow right-of-way.

In this combination "Hi-line" and distribution duct line the two sets of ducts were constructed at the same level and enveloped in a common block of concrete between manholes. Manholes are located from 300 to 350 ft. apart on the 16-kv. lines and in the commercial lines 150 ft. or less distance apart. Where the duct lines encounter the commercial manholes the commercial distribution duct line is carried into the hole while the Hi-line ducts pass by through the concrete wall of the manhole immediately adjacent to the point of entry of the commercial lines.

Where high-tension lines are brought into manholes the manholes are of special dual construction and the six lines are diverged horizontally sufficiently to permit three of them to enter along one side of the common wall between the two manholes and the other three to enter along the opposite side of the same common wall. Thus the 16-kv. cables are separated and it is impossible for any one case of manhole trouble to involve more than three of the six transmission lines. Where the Hi-line manholes are encountered the commercial duct line passes across the top of the manhole between the two vertical extensions which serve as entries to the Hi-line manholes. At these manholes, of course, the Hi-line ducts are dropped away from the commercial duct level to permit the construction of the Hi-line manholes completely under the commercial duct lines.

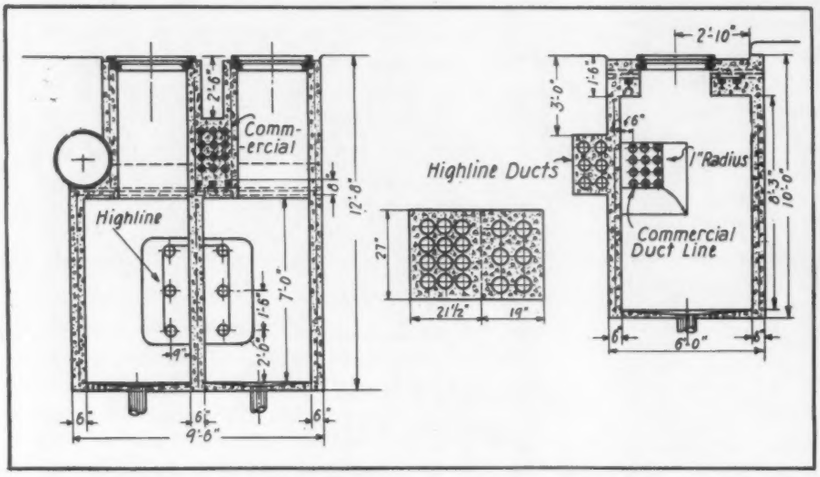
With this scheme of construction it is possible to build the system piecemeal where desirable and as load conditions require. Only where manholes are constructed is it necessarily desirable to build both the high-tension and the low-tension portions at the same time. This is done to obviate any possible necessity of disturbing a manhole once completed in order to extend the system as a whole. Thus, whether it be a Hi-line manhole or a commercial manhole that is constructed beyond the end of the dual duct construction, the section of duct line that necessarily becomes an integral part of the concrete work of the manhole is cast as part of and at the time of the manhole construction.

At the time of the initial construction of this dual duct system, nine blocks of it were laid complete as a unit. Beyond that portion three more blocks of Hi-line duct were laid, to be followed at a later time by the commercial duct lines as distribution requirements dictate. In these cases the section of commercial duct line involved at the Hi-line manholes were constructed when the manholes were constructed. If the commercial duct line had been extended first instead of the Hi-line duct line, no extra construction would have been necessary because the Hi-line duct line could later be built along immediately adjacent to the commercial manhole without in any way disturbing that manhole.

Where duct lines enter manholes the wall sections involved are curved or "flared" to provide curvature bases upon which incoming cables may be laid, thus predetermining the maximum bending angle of cables at points of entry into manholes.

In transformer vaults this curved construction also is followed out in the corners of the vaults again to form curvature bases for the cables. Standard wooden forms are used for these curved sections, thus simplifying construction procedure. The added precaution of providing these curvatures lessens very greatly the chances for cable damage incident to sharp bends.

The cost of constructing the dual duct system, all points considered, was about the same as it would have been had the two duct runs been constructed independently. Congestion of street space beneath street surfaces involved, however, made the dual construction the only feasible method. It was a case of getting two groups of lines into a single right-of-way.



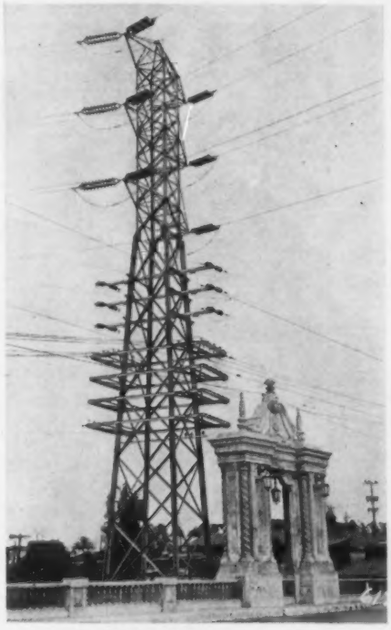
Cross sections showing design details of Los Angeles Gas and Electric Corporation's duplex underground construction. "Hi-line" manholes (*left*) are built beneath the level of the duct run and provide independent compartments for each set of three 16-kv. lines, allowing the commercial duct run to pass over between entrances. Between manholes the two duct lines are run as shown in the center. At the left is shown the commercial manholes and vault, built at street level and allowing the high-tension duct line to pass along one side.

Safety a Guiding Motive—With 218 men working, the Long Beach steam plants of the Southern California Edison Company set up a record of 12,671 "no-accident man-days" during January and February and are continuing on toward the 50,000 "no-accident man-day" honor-roll goal set by the National Safety Committee.

Joint Tower Carries Twelve Lines of Three Utilities

An interesting case of the joint use of a steel transmission structure is shown in the accompanying illustration. The site of the tower in question is on the eastern shore of the Los Angeles River within the city of Los Angeles where the Macy Street viaduct crosses the river.

This joint tower was built by the Los Angeles Bureau of Power and Light



Joint construction in Los Angeles

and serves as a supporting structure for two 132-kv. transmission circuits and one 33-kv. distribution circuit of the Bureau, as well as one 15-kv. circuit and two communication circuits of the Los Angeles Railway Company, two street lighting circuits of the Los Angeles Gas and Electric Corporation, and four 4.6-kv. distribution circuits of the Bureau.

The upper portion of the tower, of course, is of standard design for a transmission structure while the lower portion has been reinforced to stand the additional load.

Heavier Belting Increases Motor Efficiency*

"Linestart" motors seem to have a great many advantages over other classes of motors, particularly for certain applications. Experience with them seems to indicate definitely that motor maintenance costs are diminished appreciably in addition to elimination of the more complicated control apparratus required for the other type of motors.

However, one important factor seems to have been overlooked in the application of linestart motors and that is the matter of the increased starting load placed upon the belting or other mechanical connection between motor and driven load. The linestart motor has a higher load-starting ability and consequently will impose an appreciable overload upon belting during the starting period. The extent and duration of this overload of course depends upon the relationship existing between the load-starting ability of the motor and the starting load of the driven machine. In the case of heavy machinery it is quite possible for overloads of 200 and even 300 per cent to be imposed upon belting for periods varying from 30 sec. to as much as 3 min.

In most cases the actual effect of this condition is to cause the motor pulley to spin inside the belt during the overload period. The natural result of this is either to drive the belt off the pulley or to impose extra wear and burning effect on the belt itself. A standard motor has a starting overload of approximately 112 per cent at the shaft while a normal load linestart motor has an overload capability in starting of approximately 150 per cent at the shaft. High-torque linestart motors run well above the latter figure.

The solution of the problem is in the use of wider pulleys and wider belts and present experience seems to indicate that an increase in belt and pulley width of from 20 to 25 per cent will satisfy the increased starting load of the linestart motors of 7½ hp. and above. Where existing linestart motors may be giving trouble similar to that mentioned in the foregoing, either one of two simple remedies probably will correct the situation. The use of a heavier belt and an increased diameter pulley on the motor is one possible remedy and the other one is to increase the pulley diameter and also to increase the pulley and belt width by about 20 per cent.

It is suggested that, in the application of linestart motors, particularly where they replace motors of another style, particular attention be given to the question of relative belt and pulley sizes.

*Abstracted from a manuscript prepared by J. R. Hopkins, of the Chicago Belting Company.

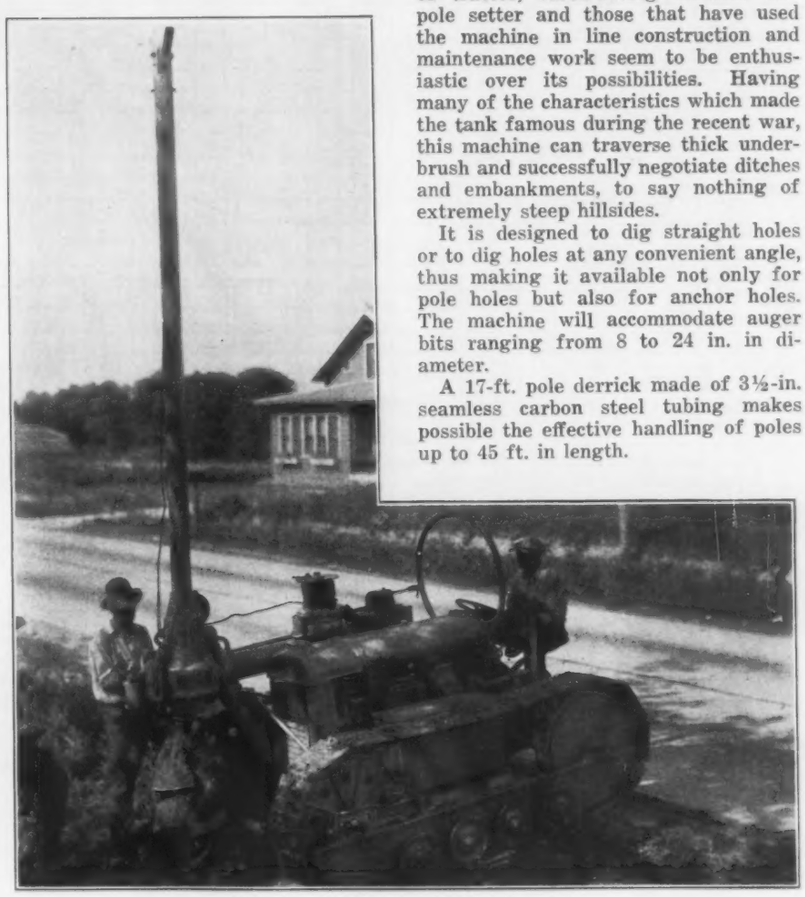
A Combination Machine for Pole Line Construction

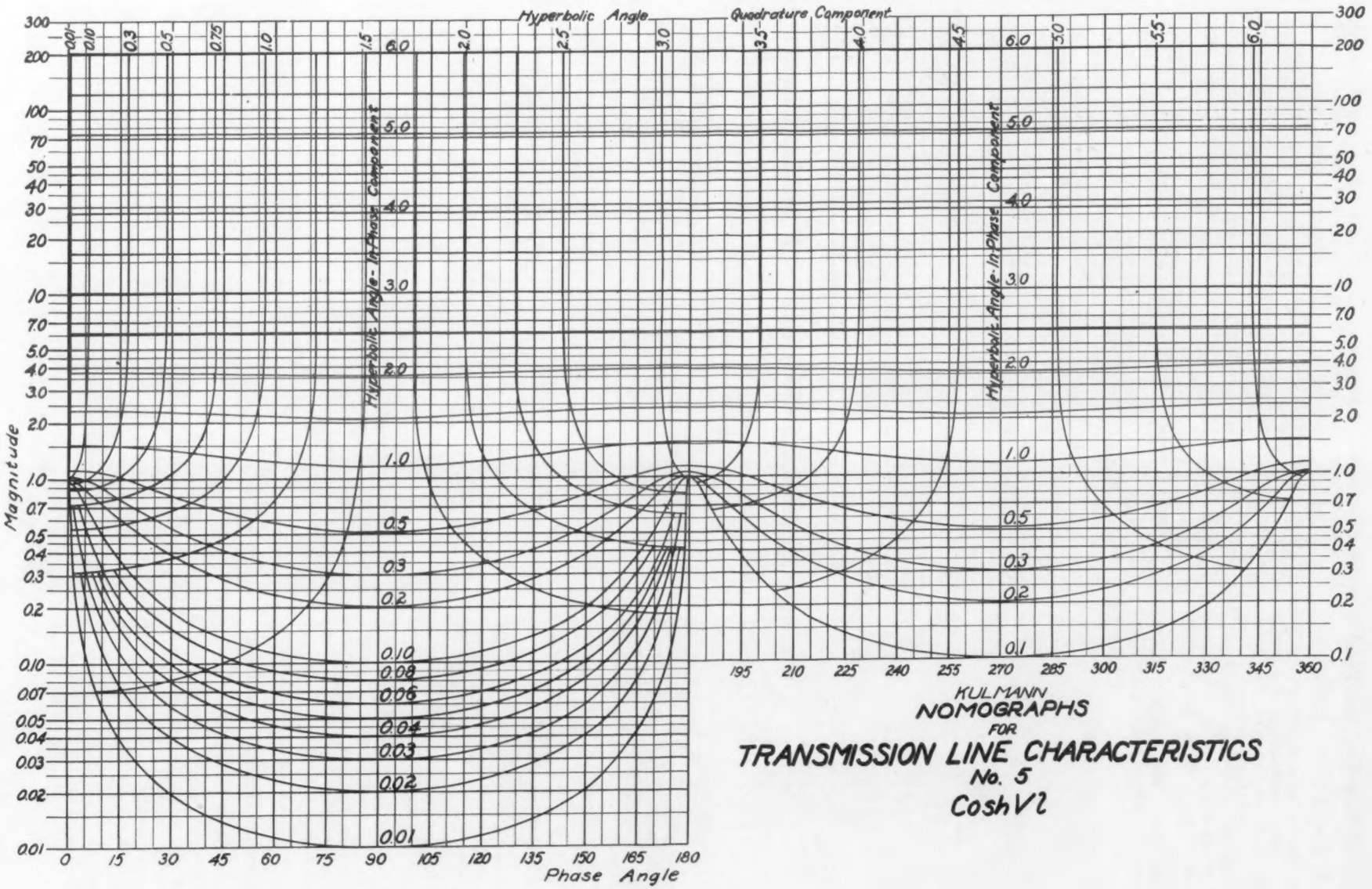
AN average of a pole in the ground every 5½ min. is the claim made for the Highway earth-boring machine and pole setter in actual line construction work.

This is a most effective combination of tractor, earth-boring machine and pole setter and those that have used the machine in line construction and maintenance work seem to be enthusiastic over its possibilities. Having many of the characteristics which made the tank famous during the recent war, this machine can traverse thick underbrush and successfully negotiate ditches and embankments, to say nothing of extremely steep hillsides.

It is designed to dig straight holes or to dig holes at any convenient angle, thus making it available not only for pole holes but also for anchor holes. The machine will accommodate auger bits ranging from 8 to 24 in. in diameter.

A 17-ft. pole derrick made of 3½-in. seamless carbon steel tubing makes possible the effective handling of poles up to 45 ft. in length.




Hyperbolic Angle
Quadrature Component
Magnitude
Hyperbolic Angle - In Phase Component
Hyperbolic Angle - In Phase Component
Phase Angle
KULMANN
NOMOGRAPHS
FOR
TRANSMISSION LINE CHARACTERISTICS
No. 5
Cosh Vl

Transmission Line Nomographs—No. 5

Graphical Solution for Determination of Numerical Value of First Term in Voltage Characteristic Equation

By C. ALBERT KULMANN*, Pelton Water Wheel Company, San Francisco.

CONTINUING with the solution of transmission line characteristics by means of nomographs, the next step determines the functions of the hyperbolic angle as applied to the entire line.

Having determined the hyperbolic angle per mile of the line in question (V or ZY) this quantity is multiplied by the line length (l) to obtain the true hyperbolic angle of the entire line. Each of the two components is separately multiplied by the factor representing the length of the line in order to obtain the two components of Vl.

EDITOR'S NOTE: In the fourth article of this particular series as it appeared on pp. 278 and 279 of ELECTRICAL WEST for May 1, 1929, the factor L was used in the equation to represent the length of the line under computation. Since this gave rise to some possible confusion, inasmuch as the symbol L is the symbol representing inductance, the equations of this and succeeding discussions will use the symbol l to represent the length of the line in question.

Referring to the accompanying nomograph, the point on the curves corresponding to the values just determined are located, by interpolation between curves if necessary. By tracing out the co-ordinates of these points as determined, the magnitude and phase angle of the quantity Cosh Vl may be read on the left-hand and lower axes of the chart, respectively.

The magnitude of the quantity Cosh Vl is multiplied by the value of the voltage (E_2) required at the receiver end of the line, and this product together with the phase angle as just found gives the value of the first term of the voltage characteristic equation:

$$E_1 = E_2 \text{ Cosh } (l\sqrt{ZY}) + I_2\sqrt{\frac{Z}{Y}} \text{ Sinh } (l\sqrt{ZY})$$

Example

To assume a numerical example that will serve to demonstrate the nomograph, take the case of a 200-mile line where the "real" or in-phase component of the hyperbolic angle has been determined to be 0.0003 and the quadrature component to be 0.0075 per mile of line. (These values determined from the hyperbolic-angle nomograph given in the May 1 issue of Electrical West.) Multiplying these per-mile values by 200 to arrive at the corresponding values for the entire line, the in-phase component becomes 0.06 and the quadrature component 1.50.

Referring now to the nomograph on the facing page, locate along the vertical scale "Hyperbolic Angle—In-phase Component" the one of the family of curves which corresponds to the above-determined value, 0.06. It happens in this case that the value falls upon a drawn curve and thus it is unnecessary to interpolate. Next pick from the upper "Hyperbolic Angle—Quadrature Component" scale the curve which corresponds to the above-determined value, 1.50. Here again the point falls upon a drawn curve and interpolation is unnecessary.

Next, follow along the two curves thus located until their point of intersection is found, toward the left. In this particular case the 0.06 in-phase curve and the 1.50 quadrature curve intersect at a point the co-ordinates of which give the magnitude of the desired vector quantity ($l\sqrt{ZY}$) as 0.092 (reading to the left-hand scale) and the value of the angle as 40 deg. (reading to the bottom scale).

Referring back, now, to the voltage equation and substituting the magnitude value just determined, the equation becomes

$$E_1 = 0.092E_2 + I_2\sqrt{\frac{Z}{Y}} \text{ Sinh } (l\sqrt{ZY})$$

The next nomograph of this series will present the solution for the determination of the value of the vector quantity represented by the last term of the equation.

EDITOR'S NOTE: This is the fifth of a series of useful nomographs dealing particularly with transmission line characteristics as prepared by the author from mathematical and experimental data. The sixth will appear in an early issue of ELECTRICAL WEST.

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Early Steel Construction Practice Revealed

A personal inspection of the steel now being removed from the first skyscraper built in the United States has been authorized by the American Institute of Steel Constrution, according to a report received from that organization. Metallurgical data which are believed to be of inestimable value to steel construction are expected to be disclosed by a careful inspection of the steel now being removed from the Tacoma building recently demolished in Chicago. This structure was erected in 1887 and was the first instance on record in which building walls were supported on the steel frame.

C. F. Abbott, executive director, and L. H. Miller, chief engineer of the Institute, were sent to Chicago June 3 for the purpose of making a special inspection in conjunction with Henry Penn, district engineer, and other officials of the American Institute of Steel Construction.

Reports received from Chicago indicate that the steel removed from the building is in excellent condition. Chemical and physical tests will be made, however, to prove the accuracy of the facts which seem to be disclosed by casual observation.

NEW BOOKS for the Engineer

HANDBOOK OF CHEMISTRY AND PHYSICS, compiled by Charles D. Hodgman and Norbert A. Lange, respectively associate professor of physics and assistant professor of organic chemistry at the Case School of Applied Science, Cleveland, Ohio. Thirteenth edition, revised; flexible binding; 4½ x 7 in.; 1,214 pages. Published 1928 by the Chemical Rubber Company, Cleveland, Ohio. Price $5.—This is a ready-reference pocket book of chemical and physical data compiled by the authors from recent authoritative sources and designed to serve both educational and commercial institutions as well as individuals having use for various physical and chemical data. A wide range of information is presented, largely in tabular form. Included in its divisions are mathematical tables, general chemical tables, properties of matter, heat, hygrometric and barometric tables, sound, electricity and magnetism, light, definitions and formulas, measures and units, wire tables, and many miscellaneous tables.

THE NATURE OF THE PHYSICAL WORLD, by A. S. Eddington, M.A., LL.D., D.Sc., F.R.S., Plumian professor of astronomy at the University of Cambridge. First edition; cloth bound; 6 x 8½ in.; 361 pages; illustrated. Published 1929 by The Macmillan Company, New York. Price $3.75.—This book is a thoughtful modern work dealing with modern physical developments in a manner which the non-technical mind may grasp and which still should appeal to the physicist. It represents essentially a course of lectures given by the author in the University of Edinburg during 1927 and the flowing conversational style of the lecturer is largely retained in this book. Mathematics is not resorted to at all. The text treats the philosophical outcome of the great changes of scientific thought that have come about recently through study relative to the theory of relativity, the quantum theory and through progress in the principles of thermodynamics. The author's aim is to make clear the scientific view of the world as it is today and to indicate modern trends.

ELECTRICAL TROUBLE SHOOTING ON THE MOTOR CAR AND AIRPLANE, by A. H. Packer, formerly associate editor of "Motor Age." Second edition; 5½ x 8 in.; flexible binding; 531 pages; 353 illustrations. Published 1929 by A. H. Packer, 8115 Harper Ave., Chicago. Price $4.—This book is designed particularly as a practical handbook for the mechanic and explains the underlying principles upon which the electrical equipment of motor car and airplane engines is built. Six chapters are devoted to airplane ignition and other electrical circuits. Other chapters cover the fundamentals of wiring, generators, ignition systems and starters common to practically all modern internal combustion engines. Many "kinks" and helpful suggestions relating to trouble shooting and testing are given throughout the book. More than 600 questions and answers and four trouble shooting charts add to the general usefulness of the text.

ELECTRIFICATION OF STEAM RAILROADS, by Kent Tenney Healy, assistant professor of transportation, Yale University, formerly inspector and cost engineer, The New York, New Haven & Hartford Railroad. First edition; cloth bound; 6 x 9 in.; 395 pages; 165 illustrations; numerous tabulations. Published 1929 by McGraw-Hill Book Company, Inc., 370 Seventh Ave., New York. For sale by Technical Book Shop, 883 Mission St., San Francisco. Price $5.—This text is based upon the author's experience in operation and construction on an electrified railroad, upon a six-month survey of European electrifications, and upon subsequent studies of U. S. electrifications. It is the author's stated aim to present in this book a combination of a description of the physical characterictics of the elements of electrification together with an analysis of the economic and operating problems involved. Typical situations are used to illustrate the difficulties and uncertainties encountered. Emphasis is placed upon power supply contracts, overhead distribution systems and economic data.

Ideas for the Contractor

Re-inspection as a Balance to Construction

Continuous Program Best, But Slack Building Period Offers Opportunity for This Work Where Inspection Force Is Limited

ON THE same principle as that advocated by President Hoover in relation to government construction work during years of unemployment, reinspection of commercial and industrial buildings offers an off-peak solution to the declining building market for electrical installation work existing at the present time. It offers more than just this. It offers communities which take it up in an organized way an opportunity to catch up with local progress.

With re-inspection also, fire and life hazards thoughtlessly made and overlooked in the rush of new construction may be eliminated. This factor alone in a re-appraisal by fire underwriters has been known more than to offset the cost of making the correction necessary in most establishments.

To the contractor-dealer, of course, it means work during an off-building year. It means the sale of new and up-to-date electrical equipment to replace the hazardous, overloaded and either worn-out or less safely designed equipment of the past.

To the manufacturer and jobber it means a steady flow of material and equipment which will help to keep prosperity on an even keel.

To the central station nearly always it means more load and less trouble in service requirements. It means customers getting service with which they are satisfied.

To the customer, the industrial and commercial establishment, the one who pays for it all and seemingly is forced to make changes against his will, reinspection and correction always result in additional efficiency. Usually it lowers unit operating cost of equipment. Additional electrical features put in at the same time usually improve plant production, or, in the case of a store, attractiveness and sales appeal.

A Definite Program Best

In most of the larger cities this reinspection work is a definite part of the inspection department program. When construction business is at its height, however, practically all the manpower of an inspection department is busy inspecting new work being installed. It is during this period also that a number of makeshifts in wiring are improvised and practically all the conditions which make for hazardous installation arise.

A principle suggested by Foster and Catchings, noted economists, and advocated by President Hoover, is that during periods of business depression government projects be undertaken to provide a balance in employment and to keep money in circulation.

Re-inspection as a policy theoretically should be a continuous part of the routine of an inspection department. Those departments which carry it on as a city program usually assign the responsibility to one or two well trained and diplomatic inspectors.

Naturally the hard-boiled order to make corrections defeats itself. Many cases have to be nursed along for months before acquiescence to an order to change wiring is obtained. In fact it may almost be made a rule that the electrical department which has to use its last resort weapon—an order to condemn the building because of faulty wiring—is a department beaten in its re-inspection project.

How the program may be worked out in an average sized community having an inspection department is perhaps best illustrated in the experience of the City of Fresno during its 1923 reinspection campaign. Herbert Stitt, now field secretary for the California Electrical Bureau, was at that time inspector for the city. He was asked to give an account of the organization of the work and its results in the City of Fresno during that period.

Fresno Experience

The previous re-inspection in Fresno had been made in the year 1921. In the meantime it was felt that a number of faults in wiring of commercial and industrial buildings had caused hazardous conditions and the council appropriated $1,000 for the re-inspection program. From this was paid one man's entire time, $200 per month for a period of three months, the time of a stenographer at $100 a month, and miscellaneous expenses of $100. The city furnished a car for the inspector.

All commercial buildings, factories, packing houses, and industrial buildings were inspected in an impartial block-to-block survey. There were discovered about 2,700 infractions of local electrical rules or of rules of the State Accident Commission or National Electrical Code.

These infractions ran all the way from plugged fuses, defective cords and sockets, uncovered outlet boxes and unsoldered attachments, to more serious overloaded conditions of circuits and panels.

This program was carried out during the first months of the year during the time when construction activity was slack. It had the double effect of providing time for good inspection during the department slack period and also of stimulating business for the local electrical trade.

In results for the consumer the best evidence of effectiveness was in the fact that when the insurance underwriters' re-rating of Fresno was made there were $17,000 in insurance rate reductions made due to the enforcement of the city ordinance and the electrical code.

Notification

After making inspection a letter was sent to each business firm calling attention to the infraction of the rules found and recommending the correction. From this first letter 1,700 of the infractions were cleared up. A follow-up letter later brought in a great many more corrections. Of the 2,700, 600 had to be pressed and of these only a very few had to be dealt with severely.

As with a good many worthwhile municipal projects, a change of administration gave no support to the program and without appropriation this work was stopped.

From the experience of the campaign, however, it was learned that to be successful it must be made general and complete. The re-inspection must be made city-wide in order to eliminate the feeling of discrimination and to prevent criticism and opposition.

Substation supplying buildings 3 and 4 with its three 250-kva., 440-volt, three-phase transformers for secondary power and light. All primary and secondary leads carried in trenching seen in floor.

Primary and secondary switchboards on opposite wall. All leads are brought in the floor trenching and looped back through trenches to the duct system for distribution to secondary panels.

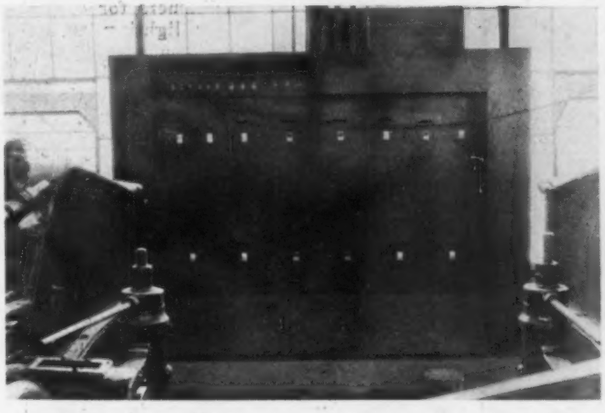
On the *Rush* With a Roofing Factory

Typical secondary distribution panel for power and lighting in the plant. Lighting is taken off 440-volt circuits by single-phase, 110/220-volt transformers.

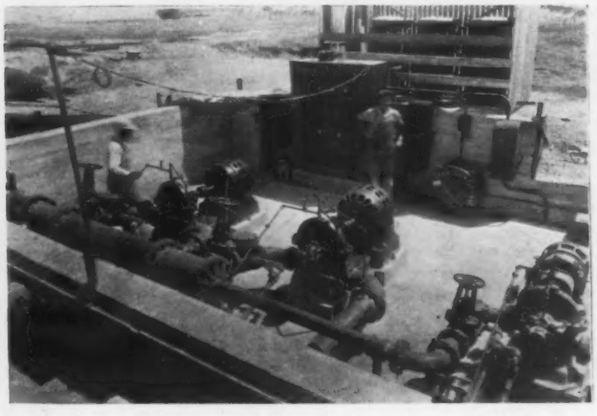
WHEN the Johns-Manville Corporation decided to add to its two plant buildings at Pittsburgh, Calif., two more buildings—one a paper mill, another a storage house—it demanded of the engineers, Hunter & Hudson of San Francisco, extreme speed. In two weeks the plans and specifications were rushed out, bids called and contract let to Victor Lemoge, Electragist of San Francisco. Thirty days were given him to do a $38,000 electrical installation. Though delayed by erection of steel, he still had the plant operating in four weeks from start of work.

The feature of the job was an underground cable run of 1,600 ft. through ducts furnished by the owner, to feed a pumping plant at the Sacramento River. Underground was used to feed all distribution panels also. The job includes 1,000 hp. in motors in the two buildings besides the pumping plant.

General lighting is furnished by RLM reflectors on aligning hangers suspended from conduit laid along roof trusses. This is in building 4, where the paper mills extend the full length of the plant.



A big secondary distribution board feeding 100 hp. to the breaker-beater, three 150-hp. motors for pulp mills, two 50-hp. motors to rag cutters and miscellaneous power.



Pumping station on Sacramento River, a quarter-mile away, contains two 40-hp. and one 7½-hp. motors, controllers, panel and transformers, all fed through underground ducts.

The floodlighted Northern Life Tower at Seattle can be seen for fourteen miles.

Lighting Determines *Design*

Architecture of Seattle Tower Planned to Make Floodlighting a Feature

MOTION color lighting, as built into the new Northern Life Tower in Seattle, seems to meet every artistic requirement in building floodlighting. It provides color in pastel shades for those who like soft colorings. It provides fully saturated color at one phase of the dimmer for people who like their colors rich and deep. At another phase of the dimmer it provides white floodlighting for those who object to color.

The architects, A. H. Albertson, of Seattle, with Joseph W. Wilson and Paul Richardson, associates, although they designed the building principally for the floodlighting, did not consider it advisable to provide a theatrical effect. The floodlighting is of a restrained character and is not at all garish. Lyman Day Morgan, Pacific Northwest district manager of the Pittsburgh Reflector Company, acted in a consulting capacity as illuminating engineer for the installation.

Throughout the building both inside and exterior were planned with the illumination as a first consideration. The building was designed along lines of modern art but due to its location in Seattle the architect desired to tie in with the modern art something of the oriental. The ornamentation, therefore, is oriental in feeling. It has been designed to avoid any horizontal breaks or any suggestion of the classical in architecture. Seattle's building code is sufficiently elastic so that setbacks do not have to be planned as they do in New York on a sort of Babylonian terrace arrangement.

The coloring of the building at the street level is almost a dark rich red. The trim is in dark Texas pink marble. This has been combined with brick. The tower itself is constructed of this material. From the dark red at the street level the color fades to almost a light cream at the top. All of this has a bearing on the floodlighting.

Piers starting at the street continue to the top of the structure. Between these piers setbacks have been arranged large enough to accommodate the floodlights at the seventeenth story, twenty-first story and twenty-fourth story levels.

In planning the floodlighting a base of light of fairly low intensity running all the way around the building, was designed. Upon this the higher intensities of light can be said to rest. In order to provide this, ornamented terra cotta baskets were installed between the piers. These piers, or pilasters, divide a group of two windows between each pier. Under these windows on the fourteenth story level the baskets are installed.

Each of these baskets contains two 300-watt floodlights. This band of white light of low intensity is on a dimmer so that it is not on when the colored lighting begins to appear.

Colored light first appears at the nineteenth floor. Four 1,000-watt floodlights are installed in offsets provided for them between each pier at this floor level. Two of these contain 1,000-watt lamps with clear lenses and two contain 1,500-watt lamps with color lenses. At the present time this level is colored red. These units light four stories.

On the twenty-third level another setback has been arranged and the same number of 1,000-watt floodlights is installed. Green colored lenses are used on the alternate units in this case. These units provide lighting between the piers for three more stories.

Above these an observation walk has been provided for the top of the building and a considerable setback occurs. This permits the installation of 32 500-watt floodlights with clear lenses. These provide a white band of light which makes a crown for the building.

Color changing is done by means of washing out the color with white light. For this a bank of reactance dimmers is connected with the white circuits. When the white light is dimmed the colored light appears. When the white light slowly washes out the colored light, the building is changed from color to white.

It has been found that the white floodlighting of this building is visible for fourteen miles at several points across the bay from Seattle. The colored light, however, is visible for about ten miles.

The restrained character of the floodlighting of this building is an example of real artistry in the use of light on buildings. The soft light used as a base, increasing in intensity on a white phase of the dimmer to where the topmost section of the building is extremely bright in intensity, has been pronounced by architects as quite a step forward in the floodlighting art. The intermediate step where pastel coloring prevails, that is, when part of the white light is on, has brought much commendation.

In all there are 48 1,000-watt floodlights with clear lenses, 64 1,000-watt floodlights with color lenses equipped with 1,500-watt lamps, eight 1,000-watt floodlights with spread lenses, 32 500-watt floodlights, and 54 300-watt floodlights. A total of 170,200 watts is used in floodlighting alone.

The electrical installation was made by Ne Page, McKenny Company, of Seattle. Aside from this floodlighting the building has a number of notable electrical features. To provide space for the reactance dimmers for control of the motion color lighting an extremely large dead-front switchboard 43 ft. long and 8 ft. high, is installed. It has a 4,000-amp. main line circuit breaker for lighting, a 1,800-amp. main line circuit breaker for three-phase power, and a 1,400-amp. main line circuit breaker for controlling elevator and d.c. current throughout the building.

Among other features is the control of corridor and stair lights in sections by means of remote controlled switches operated by momentary contact switches at a central point on the first floor. Remote electrically controlled thermostats are installed in various portions of the building to control temperature. Steel underfloor duct is installed throughout the building for light, telephone and bell wiring.

Self-Supporting Conduit Racks Put No Strain on Walls

FOR THE electrical contractor who handles large quantities of conduit there is much to be learned from the manner in which the stock of conduit is handled at the new warehouse and office building of Allied Industries, Inc., on South Hewitt St., Los Angeles. In fact the conduit racks are really the most unusual feature of the entire building and stock arrangement.

The particular feature of these racks is that they are designed so that all of the weight of the conduit is taken up as a floor thrust and absorbed by anchors in the floor slab. No weight is on the walls or the pillars of the building.

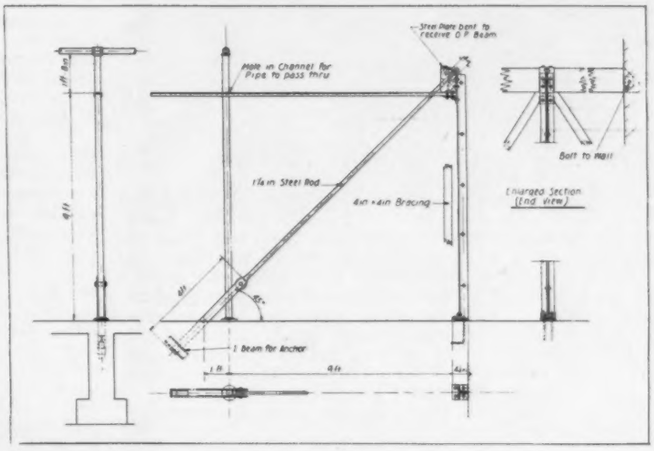
These racks were designed by the architects of the building, Stanton, Reed and Hibbard, of Los Angeles. An accompanying illustration shows their principal design features. The racks are arranged along one wall and down the center the whole depth of the building. Instead of resting against the walls of the building or the upward pillars in the center of the building, the thrust is taken up along a beam at the top of the rack and transferred by means of tie-rods to an anchor imbedded in a foundation wall. The racks are designed to withstand a thrust of 1,600 lb. per linear foot of rack. Most of the weight is carried by the tie-rod which is anchored under the floor slab. The back member of the rack is a compression member only, taking only a downward thrust.

Another feature is that the floor slab is 8 in. thick to eliminate the bending moment which might be caused if a rack were only half filled with conduit. The floor is reinforced with wire mesh. The foundation walls underneath the floor are also reinforced.

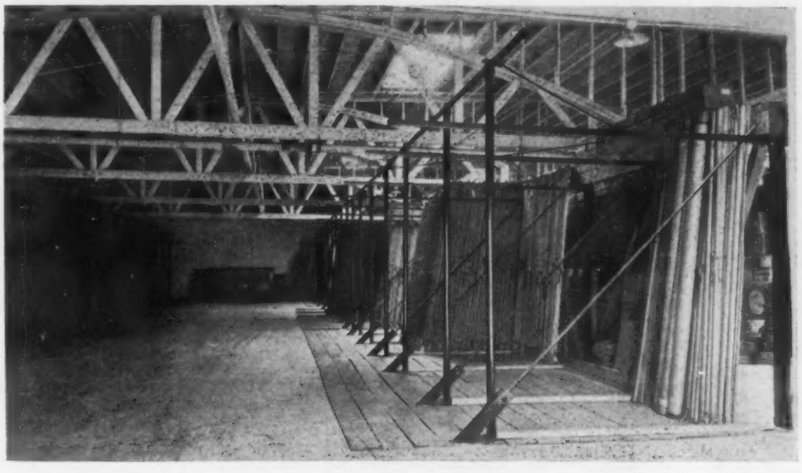
Other features which should interest a contractor handling much pipe are the fact that the two racks of conduit are arranged along both sides of an open driveway. A ramp from the street level leads up to the conduit rack floor. The black conduit is kept on one side and the galvanized conduit on the other. A truck may back in to the particular bin containing the conduit size wanted and load directly. Another alternative is the loading of trucks from the doors along the spur track side of the building.

Most of the conduit is received by water, transferred to box cars or trucks and delivered to the building. Conduit is ordered in such a way that there is a minimum of handling. The car containing it is spotted according to the size of conduit contained in it and in a way to minimize the labor of unloading. It is then unloaded to the racks near at hand for its particular size conduit.

A rack in the center of the building. Note the cross bracing at the top of the rack.


Steel Plate bent to receive 0 P Beam
Hole in Channel for Pipe to pass thru
Bolt to wall
1¼in. Steel Rod
4in.×4in. Bracing
Enlarged Section (End View)
I beam for anchor

Drawing of construction features.



A drive-in runway between the rows of racks facilitates loading. Black pipe is kept on one side, white on the other.

A chart is kept which shows the maximum capacity of each bin and the amount of conduit in stock at all times. This perpetual inventory aids in the ordering of new supplies.

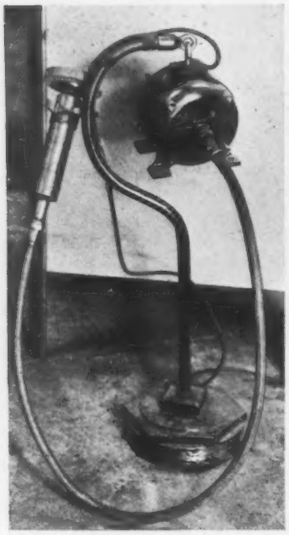
Proving that this particular concern believes in electrical equipment, the office is heated electrically with built-in heaters. There are three 4-kw., one 2-kw., and one 1½-kw. air heaters. The building is also equipped with a fire sprinkler protection system which reduces fire insurance.

Wire is carried in stock with the rows of reels of particular sizes being segregated. A perpetual inventory shows on the first reel in each row the amount remaining in stock.

The office is well fitted electrically, including lighting facilities. The company's own steel fittings for floor outlet boxes and telephone connections are used.

MOTOR

Portable Grinder From Motor and Cable

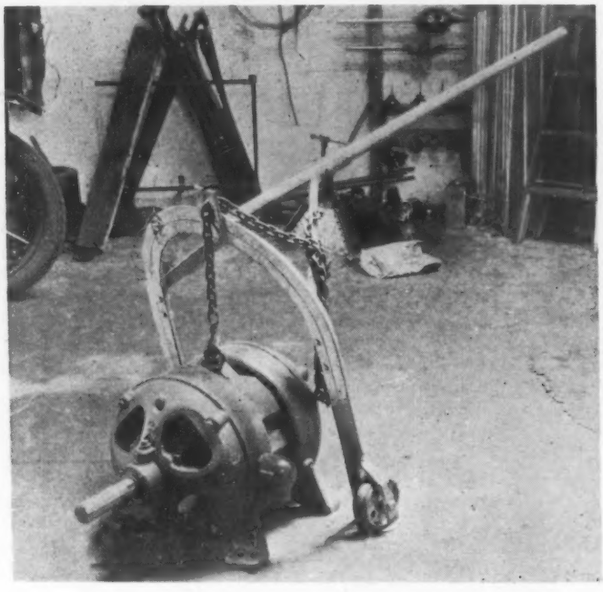


A HANDY portable grinder fashioned from a ¼-hp. motor and a section of flexible cable, with the handle made up to fit, has been assembled in their own shop by Backstrand Bros., of Riverside. As will be seen in the illustration, the motor is suspended on a gooseneck of conduit in such a way as to give considerable freedom of action. The gooseneck is screwed into a heavy metal plate which acts as a base. This base is of sufficient weight to keep the entire apparatus on a good footing and yet is not too heavy to move around as desired. Buffer wheels can be used instead of grinder wheels as required.

Even Mice Could Move Motors

CALLED a "ditty mouse" by V. R. Knight, of the California Electric Works, San Diego, this portable lever crane for lifting motors and moving them from one place to another on the sales or shop floor is one of the handiest "mice" known to electric motordom. It is simplicity itself. A slot at the top of the arch allows a chain to be hooked at any desired height. The hook at the other end of the chain picks up a motor by the ring usually found on top of all motors. One man at the end of the long lever arm can lift and move on its rubber-tired pulley wheels any one of the heaviest motors on the demonstration floor.

This little crane is far more flexible than an overhead trolley system for most uses.



HOW MOTOR SELECTION

IT IS a fallacy to say, without previous information and study of the load characteristics, that any motor of a given horsepower will handle all loads whose demand does not exceed the motor horsepower. To operate successfully a motor must reach "full load" speed. In this connection TORQUE is the important factor which must be given full consideration.

A motor may have ample horsepower to handle the load, after the full load speed has been reached, but if the motor hasn't sufficient torque capacity to overcome the static friction of the connected load, full load speed will never be reached. In many cases where larger motors have been prescribed by a dealer to overcome difficulty in starting, the real solution has proved to be another type of motor of the same horsepower but of greater torque starting capacity.

Extended tests by competent engineers, employed by the larger motor manufacturers, have resulted in well defined lines of division between the "torque demand" characteristics of the many types of machinery used in different lines of manufacturing. For purposes of simplicity these divisions have been defined as: light, medium and heavy. These classifications denote the percentage of starting to full load torque demanded by various classes of machines.

Naturally, every piece of machinery must fall into one of the three classes, because every machine requires a certain amount of torque to overcome its inherent inertia and static friction if it is to be brought to operating speed. This torque demand may vary from a minimum of 50 per cent to a maximum of 400 per cent or more, above normal full load torque.

As previously stated a motor dealer's success is dependent upon his ability to prescribe successfully the correct motor, not only as to horsepower, but as to torque characteristics, speed and control equipment to handle a given load, either as represented by one machine of a given type or a mixed group of machines of many varied types.

The first step, of course, is to obtain from the prospective customer the necessary information regarding the machines to be driven. Next, set the information relative to these machines down on paper and study the torque requirements of each machine in the group. In order to do this a general knowledge of torque demand of the different types of machinery becomes necessary.

When we speak of the torque required by a given machine, we mean, of course, the percentage of starting to full load torque. All machinery may be classified roughly as requiring either light, medium or heavy torque. This rule holds good in every line of industry where machinery is employed.

The definitions of these three degrees of required torque vary, however, in the different classes of industry. The research of the engineers previously mentioned has made available many valuable data regarding this point. The preponderant use of machinery is in the metal working industries, so this class will be considered first.

"Light" (50 to 100 per cent)

Buffing lathes, emery wheels, metal saws, sensitive drills, speed lathes, boring machines, and kindred machinery.

"Medium" (75 to 175 per cent)

Slotting and key seating machines, bolt cutters, engine lathes, medium band saws, milling machines, etc.

"Heavy" (175 to 300 per cent)

Large radial drills, heavy planers, punches, forming machines, heavy boring mills, shearing machines, bending machines, power hammers, straightening machines, etc.

Next, considering another type of industry making large use of motor-driven machinery, that of wood working, we get these data:

Light Class (50 to 125 per cent)

Pattern makers' lathes, jig saws and carvers.

Medium Class (100 to 150 per cent)

Buzz planers, screw and dado machines, mortising machines, surface sanders, edging saws, glue jointers (power feed), panel raisers, tenoning machines, dowel machines.

Heavy Class (175 to 400 per cent)

Large planers, large multiple drum sanders, power feed door clamps, large surfacers, large matchers, large inside and outside molders, band saws, large timber sizers and stickers, resaws.

In still another class where motors are now almost universally used, the printing industry, we have:

Light Class (50 to 175 per cent)

Type-casting machines, sewing machines, pasting machines, book paging machines, envelope machines, stitching machines, etc.

DEPENDS ON TORQUE

Medium Class (100 to 200 per cent)
Linotype machines, cylinder presses, job presses, factory sewing machines (group driven), rotary presses, etc.
Heavy Class (200 to 300 per cent)
Quadruple and sextuple newspaper presses.

In the brewers' machinery class, the following are listed:

Light Class (50 to 100 per cent)
Carbonators.
Medium Class (125 to 175 per cent)
Barrel washers, hop machines, hop mashers.
Heavy Class (175 to 300 per cent)
Bag hoists, mash tubs, grain pumps.

Next comes the class of machinery used by grocers and butchers:

Light Class (50 to 100 per cent)
Filling machines and bag sitchers.
Medium Class (125 to 175 per cent)
Food choppers, lard coolers, mixers, coffee grinders, spice mills, etc.
Heavy Class (175 to 300 per cent)
Lard presses, meat choppers and grinders.

In the stone workers' machinery class are listed:

Light Class (50 to 100 per cent)
Marble drill presses.
Medium Class (125 to 200 per cent)
Slate saws and stone saws.
Heavy Class (200 to 350 per cent)
Pug mills, polishing stones, clay crushers, stone planers, tile grinders, rubbing beds, etc.

For the candy making industry the following machines are listed:

Light Class (50 to 100 per cent)
Corn shellers, peanut roasters and huskers.
Medium Class (125 to 200 per cent)
Grinding machines, kettles, stirring machines, mixers, dipping machines.
Heavy Class (175 to 300 per cent)
Candy pullers and mixers.

In laundries the following machines are now universally used:

Medium Class (125 to 150 per cent)
Dampeners, collar and bosom ironers, starchers.
Heavy Class (175 to 300 per cent)
Wringers, multiple mangles, extractors.

In the paint making industry are found the following:

Medium Class (150 to 200 per cent)
Grinders and water mills.
Heavy Class (175 to 300 per cent)
Large mineral paint grinders.

Monarch of All He Surveys

SINCE every man in the California Electric Works, San Diego, is a specialist in some particular work, each is provided with an individual workbench designed and made in the company's own shop. Adjacent to this tool bench is a handy cabinet for the storing of individual tools and instruments needed by that man. This method is found to be superior to a long workbench by this company in that each man has a pride of ownership of his own particular working area.

FORUM

Test Generator and Panel

EVERY motor rewound or repaired at the Quality Electric Motor Company, Oakland, is given a load test on the floor before being delivered. For this purpose a control panel, generator, and an adjustable platform for holding the motor have been devised.

The motor to be tested is placed on the floor between adjustable steel rails which clamp it tightly to the floor. It is belted to the 60-kw. generator, which in turn is connected to a water rheostat for load. Portable clamp-on leads are fastened to the motor and the test is made.

On the test panel are all switches and instruments necessary for the motor and generator. Also, a transformer connection is provided to give a high voltage test to the winding. A 1,000-volt test is applied to all 220-volt motors and a 2,000-volt test to 440-volt motor winding. This is to insure against puncture of insulation.

Small Blower Adds to Oven Efficiency

A SMALL blower attached to the door of a bake oven to force fresh air into it, and a vent pipe to exhaust moisture-laden air from it, has been found by Backstrand Brothers, of Riverside, Calif., to give higher efficiency to their oven. The oven is used in drying out motors and transformers and to bake a vitreous coating on motor windings and frames in jobs rewound in that shop.

The blower on the bake oven is particularly useful where a number of pumping plant motors have to be dried out after being emersed in water. During the pumping season literally hundreds of motors which have been wet are treated in this manner by this company. Backstrand Brothers use a gas-fired oven, but the same principle would hold for almost any oven. The blower used is a small one, of the type used on blacksfith forges. It is large enough to keep the air inside the oven in circulation but does not blow enough cold air in to chill the furnace. The vent pipe for exhausting air likewise must be small.

Red Seal

North and South

OVERLOOKING the Feather River, in a new tract high above Oroville, Calif., is a beautiful Red Seal home in which the manager of the development project lives. It is known as "Feather Lodge" and is guest house as well as home. With this home serving as a model for others being built in the tract, W. P. Joslyn, wide-awake Electragist of Oroville, who wired the house, is looking forward to having several complete electrical homes in this district.

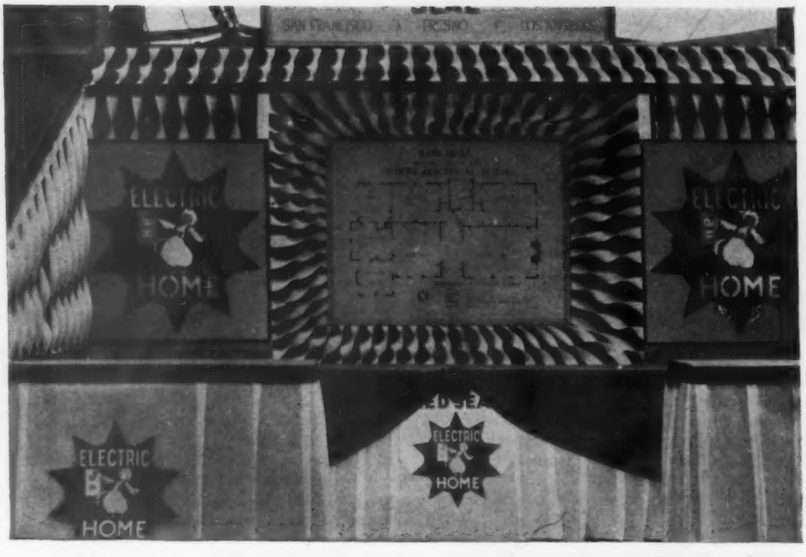
Red Seal Even in Adobe

EVEN the house made of adobe nowadays must be Red Seal. The wiring for such a house, however, presents something of a problem in that the conduit must be concealed between the bricks of adobe.

The home of Mrs. P. T. Smith, in Sutter County near Yuba City, provided Gerald Elbert, Electragist of Marysville, with a unique installation job. The home is very complete; contains a range, water heater, two 3-kw. air heaters, an electric refrigerator, washing machine and yard lighting. A water pressure system is also provided.

At Pasadena Show

ANNUALLY the Pasadena light department holds an electrical show in which all electrical contractors and dealers exhibit their wares. At the last show George Rankin, field representative for the California Electrical Bureau in southern California, set up an attractive Red Seal booth. The floor plan, lighted at each outlet by means of a tiny electric bulb of a color coded to denote its character, formed the central feature of the exhibit. Contractor-dealers sent many people to the Red Seal booth where Mr. Rankin had an opportunity to discuss the value of adequate wiring in the planning of a new home. The importance of specifying Red Seal as a guarantee of certification proved a strong selling point.



Practical Data for Estimating Lighting

By J. R. WILSON, Quality Electric Works, Los Angeles

IN PLANNING any new installation it should be borne in mind that accepted standards of illumination are tending constantly toward higher intensities. A reasonable amount of excess copper today may prove to be a very sound investment for the future.

Also, periodical voltage tests on the customer's premises occasionally may reveal conditions to be rectified by the serving company.

Rule of Thumb

Before an installation is made, and definite results can be guaranteed, it is necessary to have definite knowledge regarding the kind of work to be done, type of building, height of ceilings, color of ceilings, walls and floors, etc.

However, it is desirable at times to make preliminary estimates of cost, without taking time to make the series of calculations required to make a really bona fide recommendation.

For this purpose it is possible to make use of certain "rule-of-thumb" information compiled by competent engineers which will be accurate enough for the purpose.

In industrial plants, satisfactory results usually can be obtained by using 200-watt white bowl lamps in R.L.M. reflectors—if these are mounted 10 ft. from the floor and spaced 10 ft. apart in both directions. This will give about 2 watts per sq.ft., or an illumination of 10 to 12 foot-candles. (See Fig. 11.)

Recommendations

5 Foot-candles for—

rough assembling, rough packing, coal and ash handling, warehouses, stock rooms, aisles, passageways.

10 Foot-candles for—

good lighting for most work on light-colored surfaces. Also, for fairly close work on dark surfaces. Not recommended for inspection work or fine details on dark, light-absorbing surfaces.

15 Foot-candles—

This amount of illumination will prove satisfactory for all work requiring quick and accurate execution. Higher intensity will be required for exacting inspection of details. However, this amount of light will prove stimulating to the average workman, and will give really excellent results in the average plant.

50 to 100 Foot-candles—

According to the present trend in illumination, these intensities are not far distant. Some installations of 50 to 100 foot-candles are now in use—usually where very great localized light is required. Where used locally, general lighting of lower intensity usually should be installed.

Measurement of Light

The quantity of light projected on the working plane can be measured easily. A portable instrument, called a foot-candle meter, is available, and a contractor who makes lighting installations on a guaranteed foot-candle basis should own one of these instruments.

However, where the investment is considered too great for the number of lighting installations made, recourse can be had to the power utility serving the customer's premises. Almost all of the serving companies now own foot-candle meters, and are usually glad to furnish an engineer to make the required tests.

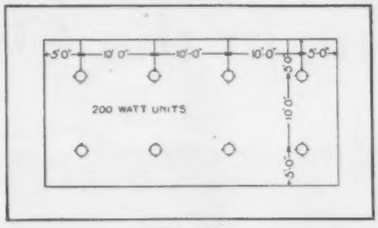


Fig. 11

Types of Equipment

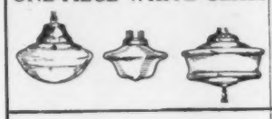
The kinds of equipment available for lighting in industrial establishments are legion. An inspection of the many different kinds now on the market reveals, however, that there are really only about eight separate and distinct types.

In the steel enameled class there are: R.L.M. dome, glassteel diffusers, deep bowl and angle types, all these being direct units.

In the all glass or semi-glass types are prismatic, one-piece glass, indirect, semi-indirect and several combination types. Usually the enclosing types are equipped with clear lamps, while the direct types make use of bowl-enameled lamps.

The table below shows types of industrial lighting equipment and recommended uses. Further data on layouts of typical industrial lighting installations will be given in the next installment of this series.

Types of Lighting Equipment

Type of Reflector			Recommended for use in			
	Size Inches	Lamp—Watts	Industrial Factories Garages, etc.	Offices	Drafting Rooms	Outdoor
RLM DOME	12 14 16 18 20	50–75 100–150 200 300–500 750–1000	X			X
GLASSTEEL DIFFUSER	18 20	200 300–500 750	X	Industrial		
DEEP BOWL STEEL	7 8	25–50 75	Local and Bench			
ANGLE	8 10 12	75 100–150–200 300–500	X			X
PRISMATIC	8	75–100	X			
ONE-PIECE WHITE GLASS 	10 12 14 16 18	75 100 150 200 300–500		Indirect Units Preferable		
Indirect or Semi-Indirect		150 200 300 500		X	X	

Better Merchandising

Appliance Selling Comes

Out in the Open

REVOLUTION has swept over the electric store. The selling of electrical appliances today is no more done as it was from one to three years ago. Two years ago appliances were enthroned on velour in glass cases. Today merchandising has come out in the open. Electrical dealers in cities large and small have taken the cue.

Chain stores, five-and-ten-cent stores, mail order house branch stores have brought a new method into merchandising. The electrical dealer has taken the hint. "If this is the way it must be sold, here goes," he has said. And lo, it is done.

A visitor to the stores of electrical dealers in the Sacramento and San Joaquin valleys of California, last year or the year before, would have found as nice a group of stores for the display and sale of electrical merchandise as could be found anywhere. They were neat, orderly, not overly stocked, and the class of appliances handled was high. The best lines of merchandise prevailed. In fact many electrical dealers frankly turned up their noses at cheap lines.

A New Scene

Today the picture is entirely different. These same stores have taken out their glass show cases and put plain tables on the floor instead. The glass is coming off the shelves. The aisles of the store are indefinite. Tables everywhere confront one. The merchandise is on these tables. It can not only be seen, it can be felt, examined, compared.

Take George Johnson's for instance. He opened a new store at Yuba City, Sutter County, in 1926. It was an elegantly equipped place. There were private fixture booths, furnished in homelike manner. The entire place had an air of elegance and class.

But George Johnson found that while his store arrangement was admired and pointed to with pride by the populace it did not bring the required volume of sales. Early last year he eliminated some of the fixture and radio rooms. This year he has opened the entire store to table display. He is spreading his field to the sale of hardware and household wares, even as other lines of merchants have spead over to the sale of electrical goods.

A visible, help-yourself sort of display of lighting fixtures which Mr. Boblet at Chico uses: ceiling fixtures mounted above, shades and globes on the shelves, stock behind the drape below.

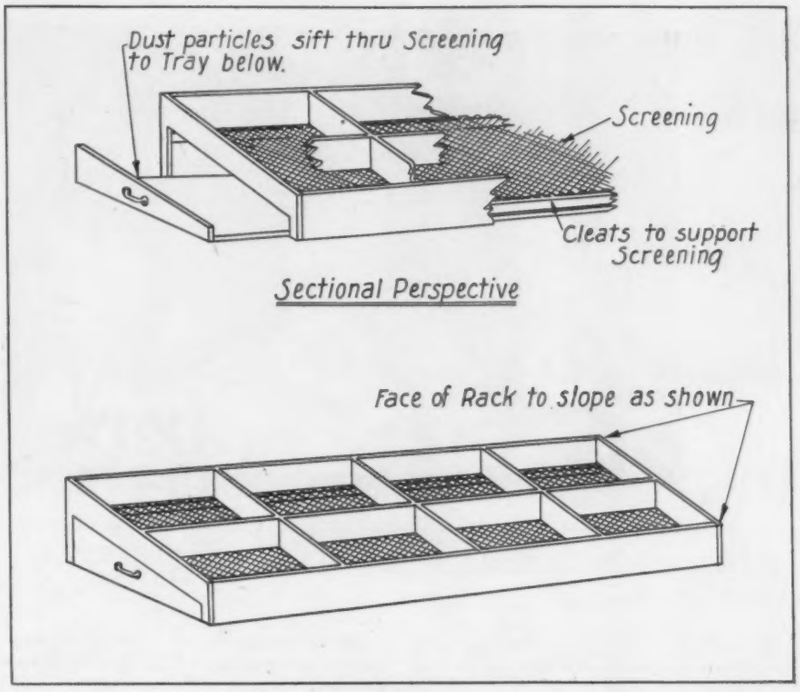
At Chico the Boblet Manufacturing Company has always been a particularly well planned display place for the lines of fixtures made by it and for appliances. A year ago it had lots of show cases and glassed-in shelves and a few choice fixtures hung for display.

"Put it on tables," now says Mr. Boblet. "It's the only way. People like to pick up the appliances and get the feel of them. They even like to come behind the counter and open cartons and see for themselves. I used to keep everything in cartons and behind these doors but now I'm going to take the glass off and put everything in trays with the prices marked on them.

"People will come in to buy lamps. On the way in they'll see a toaster, stop a minute and look at it. They are getting into the habit of picking things out for themselves. It's these help-yourself groceries that are getting them to do it. So the best thing is for us to follow suit.

"We keep changing things around. One week we will have a table full of irons here. Next week it will be toasters. Another week we'll have the radios here. The same with the windows.

Compare this typical hardware store display method used by George Johnson of Yuba City today with that he used in 1926. (See Journal of Electricity, March 15, 1926, p. 233.)


Dust particles sift thru Screening to Tray below.
Screening
Cleats to support Screening
Sectional Perspective
Face of Rack to slope as shown

Except that his racks are made without the sliding tray, this is the form of display table used by A. E. Ford, of the Electric Shop, Santa Maria, for small articles. Two of these racks may be backed up together on a table.

People detest a place that never changes.

"People come in and begin to look around first thing. Why we've sold more toasters this way than we ever did before.

"We're going to take this glass off because people ask us if they can open the doors and look at something. We're going to make it easier for them to see and get at things. I think people generally are honest if you leave them alone. They like to decide for themselves."

Competing Lines

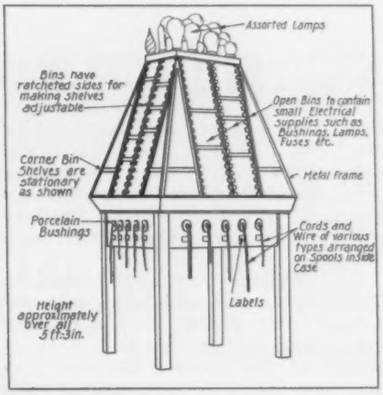
Another Chico electrical dealer who is using chain store methods is Don Bird, of the Bird Electric Company. He has gone even father in some respects, in that he frankly carries a competing or cheaper line of sockets and plugs and sundries, placing them side by side in a tiered show cabinet which he bought from a department store.

The front of this case is open. The sockets, porcelain, fittings, etc., are tumbled into the bins. A tag above the bin gives the price. At the back of the bin is another label giving the catalog number and the ordering quantity.

"We've got to go into the cheaper stuff," said Don Bird, "in order to compete with the five-and-ten and the chain mail order houses. If a customer comes in for a socket and asks the price first I just reach down and grab one of the cheaper sockets. If the person asks for a socket and looks intelligent enough to appreciate quality and compare values I take both a cheap and a standard socket and show the difference. Six out of ten of these will take the better socket.

"We don't allow the men to take the cheap sockets and stuff out on construction work, though. It doesn't pay. They always cause trouble and cost more than it is worth in trouble calls."

The materials contained in this rack are arranged in classes, the sockets in one section, porcelain in another, plugs in another, bell wiring supplies in another, fuses in another, and tape, etc., in still another. Construction items

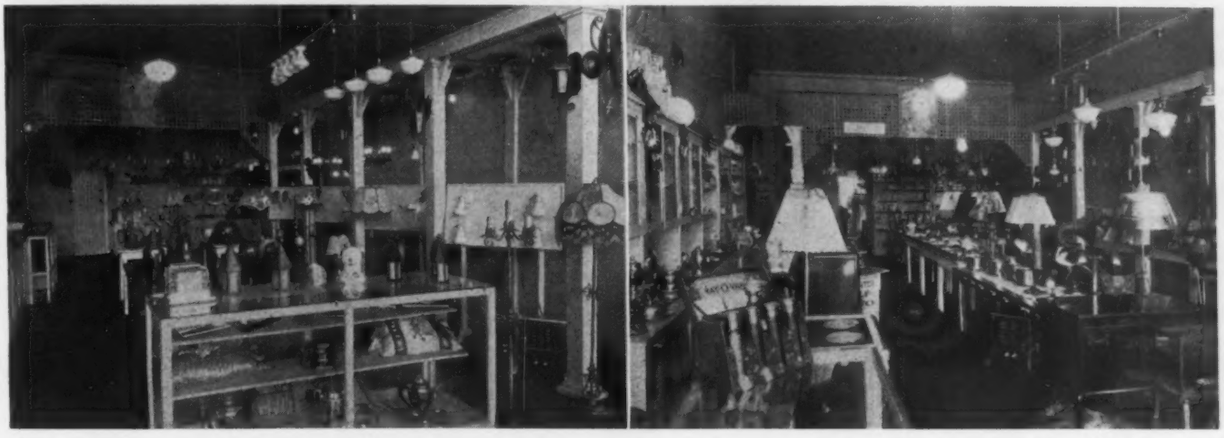

Assorted Lamps
Bins have ratcheted sides for making shelves adjustable
Open Bins to contain small Electrical supplies such as Bushings, Lamps, Fuses etc.
Corner Bin Shelves are stationary as shown
Metal frame
Porcelain Bushings
Cords and Wire of various types arranged on Spools inside Case
Labels
Height approximately over all 5 ft. 3 in.

Archie Cline, at San Luis Obispo, uses this form of portable display table for small articles and lamps.

are arranged on a board to make it easy for the purchaser to tell what he wants without knowing the name of the item.

The Reason for It All

To the dealer this type of selling has one more decided advantage. It is easier for one person to handle an entire store if it is all open and if the customers do their own buying instead of requiring a number of sales people to take things from shelves and show them. To the electrical dealer with a small or medium sized store this is an important feature.



A year ago the sales room of the Boblet Electric Manufacturing Company, Chico, had the dignified, spacious arrangement shown at left. Now it is filled with tables, and even the glass is to come off the shelves at the left of the right-hand picture.

21,000 Customers
27,510 Lamps

Why the Northwestern Electric Company Won the Silver Goblet Set

A replica of the company's own building, built of lamp cartons, made an arresting display during the contest.

EMPTY sockets are a thing deplored by the central station. But, like the weather, a good deal is said about them and nobody ever does anything about it. That is, hardly anybody. Since James B. Buman, merchandise sales manager, Northwestern Electric Company, Portland, began talking about it, however, something has been done.

To the company's 21,000 customers, 27,510 lamps were sold during a 30-day contest. The contest was a national one, conducted by the Edison Lamp Works of the General Electric Company last fall. The Northwestern Electric Company's record, appropriately enough, won the first prize for the northwest district.

The contest was won through employee sales. Yet it was the way the employees themselves were sold that counted. Literally, this was done by "talking about it."

In other words, Mr. Buman, through the medium of a one-sheet mimeographed sales letter, talked so persistently and so well that most of the sales were made by employees outside of the sales department. The six individual winners, who received special prizes and had their names engraved on the goblets, indicate the widespread interest created in the company organization by the contest. They were: W. W. Kurtz, service department; Paul Byron, steam heat department; W. D. Sharp, collector; G. R. Simpson, gardener; Dorothy Krebser, rural districts; and Mrs. Hattie M. Eben, sales department.

The goblets referred to went with a handsome solid silver decanter shaped like a lamp bulb, which was accepted by Mr. Buman for the company in the office of L. T. Merwin, vice-president and general manager.

The Sales Letters

So much for the rewards. What were the methods used?

Primarily the contest was conducted by the starting into the field of teams of employees selling lamp kits. This organization of teams was supported by window displays at the company's offices in its new building. Particularly effective was the reproduction of the building itself in one of the windows, made up of lamp cartons.

This display work was supplemented by interior displays and newspaper advertising.

Yet perhaps as important a factor as anything was the weekly sales letter sent to every salesman. This sales letter went also to the newly enlisted salesmen, the team members from the other departments who were entered in the contest.

Two of these letters are reprinted here because of the pertinent sales massage contained in each.

SELLING'S THE GAME

Portland, Oregon — October 18, 1928
No. 3, Vol. II. — For the Salesmen
Published Weekly. — Edited by Them

DEFTLY, BOY, DEFTLY

"I would caution every young man who aspires to being worthy of wearing a business suit that he be careful about wasting his energy," said a man who started at zero and had a nice, comfortable million put safely away.

In one column he reads about hard work, and in the next he sees that he must have a terrific punch and the wallop of a mule—he must be a live wire, a go-getter and a speed demon all rolled into one human dynamo.

Danger lurks in all this. There is no discounting hard work. There is no other route to the top. But if it is thought of in terms of "punch," "wallop," and "live wire," one's efforts to be a human dynamo are apt to lead to "puffs and pants" and running circles.

I know young men who are so bent on injecting action into their conversation that when they can't think of anything to say they puff like a wheezy horse. Somebody has made them believe that noise is action. They think that to make an impression they must paw the air.

They forget that the only activity which ever gets any place is *thinking*. Systematizing a business is the result of thinking. Making a sale is the result of thinking. The need is for more and better thinkers—not table pounders.

Let the coming business man go deftly about his work. Let him work diligently, but without pounding himself against the laws of nature. Thinking things out is so much better than fighting them out. Serving is better than bluster. Let us have more poise and less excitement—not so much rushing, but more thinking and more doing.

• • • •

THE DIFFERENCE

A pessimist wears a belt and suspenders. An optimist is a fellow who still pays his dues in the Bartenders' Union.—Selected.

Another example of an effective message—the message of staying with it—follows:

LASTING ENTHUSIASM IS WHAT COUNTS

She was a pretty girl—vivacious, sparkling, and alert—a joy to behold as she stood on the corner of a busy thoroughfare in the industrial section, offering boxed lunches to the motorists who passed on their way to work.

Her smile and coquetish manner brightened an otherwise dull street corner. Apparently it was a new business for her and the novelty of the work and the attention she received, made it very interesting.

Gradually, however, that novelty wore off, and the job became irksome, there was no longer a thrill in the waving of hands from the motorists whose attention she originally sought. With the passing of her enthusiasm, her smile, her vivacious, coquetish manner also passed.

For three weeks longer she stood on the same corner, becoming more and more a pathetic, bored figure, whose outlook on life seemed dulled. The pile of lunch boxes at her side didn't dwindle away as fast as they had the first week or two and whenever someone stopped to purchase, the transaction was listless so far as she was concerned.

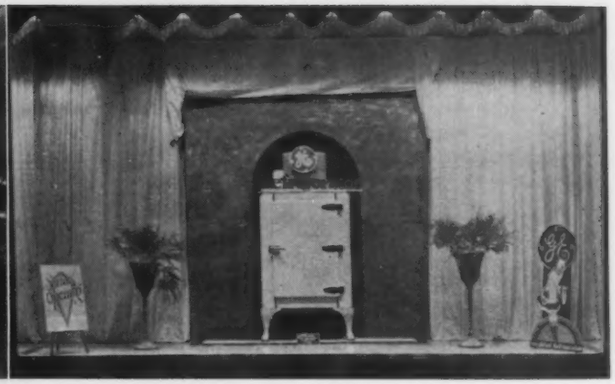
Seemingly it became unprofitable for her or whoever she worked for, and one day she failed to appear in her accustomed place and hasn't been seen since.

Do you think she was in any way unusual? Not at all—she was very much like the average run of individuals whenever they undertake new work. The early flush of enthusiasm carries them into a seventh heaven of delight. It reflects itself in their actions, in their appearance and in the responsiveness of others. Then, as their enthusiasm wanes, as the monotonous routine begins to make itself felt, the job becomes uninteresting, a bore—merely something to be endured.

Wise indeed is the person who cultivates the habit of being enthusiastic. Lucky indeed is the person who can find in each day's task something to be enthusiastic about and reflect that enthusiasm in others. It is LASTING ENTHUSIASM which counts.

"Sell yourself to your prospect, but don't buy yourself back again" is the good advice of a contemporary. Too much talk is almost as bad as not enough.

While entire credit for the results of the campaign cannot be given to these stirring sales messages alone, they helped to co-operate the efforts and stimulate all those selling lamps to fill Portland's empty sockets.



Advertising Refrigerators *by All Means*

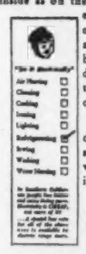
(Above)

A "Spring Showing" of electric refrigerators at the Utah Power & Light Company's stores in Salt Lake City and Ogden was held recently and attended by large numbers. Features of the machines were shown but no selling was attempted.

CAMDEN GREEN, Dover Green, El Fusher Gray, Diana Blue, Bayuda Gray . . . and dozens of other colors in the new lacquer finishes are yours . . . free . . . with the new SERVEL electric refrigerators.

Just ask the refrigeration specialist at the nearest Edison office to show you color samples of these modern lacquers. Select the model SERVEL you want in your home and we will finish it in any color you desire.

Come in and see the SERVEL electric refrigerator. You'll find it as modern inside as on the surface. Years of experience are back of the modern mechanism. SERVEL embodies refinements in design and construction whose working out began years ago.



Come in—and ask questions. We'll answer them gladly . . . with the refrigerator itself before us.

SERVEL

SOUTHERN CALIFORNIA
EDISON COMPANY
Owned by Those it Serves

The NEW TIMKEN-equipped Electro-Kold
—*operates from the light-socket*

$210

Delivered to your home, anywhere West of the Rockies.

Refrigerator height outside, 57½ inches; width, 26½ inches; Depth, 19¹¹⁄₁₆ inches. More shelf space inside than other refrigerators anywhere near the price.

As easy as plugging in a toaster! As easily moved as a kitchen cabinet! Electro-Kold and Timken engineering resources designed this last word in home refrigeration. Lacquer finish on Armco iron. Keeps foods better and more economically; freezes your own ice cubes; makes your own sherbets, parfaits. Get Electro-Kold, made by the western pioneer of the electric refrigeration industry, established in 1922.

More shelf space . .

The new Timken-equipped Electro-Kold is designed and priced for the average home. Height, outside, 57½ inches; width, 26¼ inches; depth, 19¹¹⁄₁₆ inches. Ingenious arrangement gives it shelf space of a much larger refrigerator, at the same time freezing the same amount of ice. Larger unit models are also available, or Electro-Kold units can be installed in your present refrigerator, if you wish. Convenient terms, of course.

TIMKEN BEARING EQUIPPED

Electro-Kold is in a home near you

Thousands of Pacific Coast homes have Electro-Kold. We list here only a few Electro-Kold owners. No other electric refrigerator has a better record of service and satisfaction. Big power company engineers have approved Electro-Kold as dependable and moderately priced

For stores

Electro-Kold originated a double-duty refrigeration system for stores—ice box, counter or show case, operated as one machine. Saves space; refrigerates hard-to-cool places

For apartments

Electro-Kold has perfected the multiple control for apartment buildings—old or new! Scores of installations giving wonderful satisfaction, in the finest apartment houses on the Pacific Coast.

Fine homes in this city ELECTRO-KOLD equipped

ROBERT E. SMITH
[illegible] Thompson Street

DR. A. TOBELMANN
[illegible] Franklin
17 Yerba Buena

EARL MURPHY
867 Thompson Street

W. W. CLARK
[illegible] Ogarrah Road

DR. JOHN N. [illegible]
Waverley Heights

V. H. MOON
1475 East 28th Street

C. E. COONEY
[illegible] Hudson Road

WM. S. LAYTON
The Alameda, Burlingame

DR. C. DENNER
848 East 30th Traffic

C. E. PRESTON
782 Buena Road

THOMAS TAYLOR
2181 Hyde Street Terrace

E. W. SMITH JR.
1868 The Alameda

H. H. HOUGHTON
[illegible] Ridge Road

See our dealer or write to The Electro-Kold Corporation, Spokane, Washington

Medford—Medford Electric Company
Grants Pass—Dimmick's Electric Store
Klamath Falls—The Electric Shop
Montana Power Company—All Towns They Serve
Pacific Power & Light Company—All Towns They Serve
Colorado—Southwest Washington Electric Gold Company
1107 Market Street

Electro-Kold Sales Co. of Portland
227 Sixth Street, Between Salmon and Main
Phone AT 0881
Salem—J. C. Stowell
Dallas—The C. E. Hamilton Furniture Company
Eugene—W. L. Maude Company

Centralia—Southwest Washington Electric Gold Company
111 North Tower
Boise—Boise Electric Vehicle
Lewiston—Southwest Gas Electric Gold Company
[illegible] Traffic
Eastern Oregon Light & Power Company
[illegible] Gould and Baker

ELECTRO-KOLD

Since 1922 — The simplest electric refrigerator

(Above)

A manufacturer of electric refrigerators that told where its product might be bought in Portland and listed a number of its satisfied customers. A mechanical feature of national reputation is also made a feature of in the heading. The advertising of the roller bearing company thus is utilized in giving value to the manufacturer's own product, the refrigerator.

(Below)

The color appeal was used by the Southern California Edison Company in one of its refrigerator campaigns. Two advertisements used are reproduced on either side of this page. That directly below lays stress on low operating costs of "electric ice."

ELECTRICAL REFRIGERATION

costs but 8¢ per day

From actual tests it has been found that the maintenance of an electric refrigerator of average size, to serve a family of four or five persons, costs but *eight cents* a day on the Edison System.

Women in Edison territory have been quick to realize that electrical refrigeration is one of the best labor-saving appliances ever devised, and that it greatly improves sanitary efficiency in the kitchen. More than 10,000 household electric refrigeration units are in use in this territory.

Investigate the new model SERVEL refrigerators at any of our 72 offices.

SERVEL

SOUTHERN CALIFORNIA
EDISON COMPANY
Owned by Those it Serves

News of the Industry

Puget Sound Company *Wins* Forbes Magazine *Award*

Public Service Cup Given at N.E.L.A. Convention Is Won by Northwest Utility for Most Constructive Public Relations Campaign

THE SIGNAL success achieved by the Puget Sound Power & Light Company, Seattle, in developing its business and furthering the growth of its territory in western Washington in the face of adverse political and geographical conditions over the past 30 years brought to the company the 1929 award of the Public Service Cup, presented by Forbes Magazine at the N.E.L.A. convention at Atlantic City, June 6, 1929. The cup is awarded annually "as first prize in a national contest for the most constructive public relations campaign carried on by a light and power company in local territory during the past year."

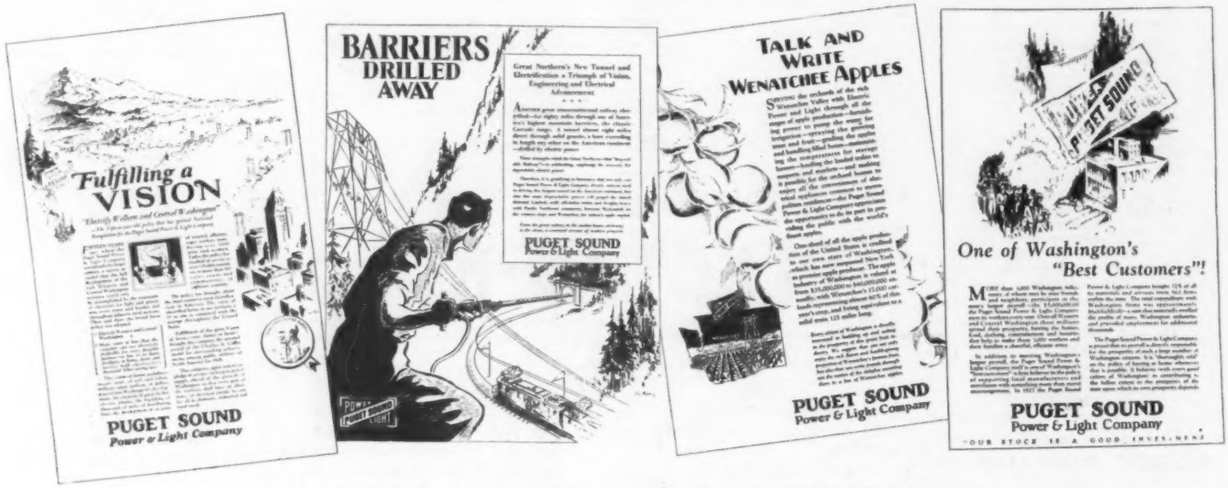
The company's exhibit, offered as evidence of its fitness for the award, was predicated on showing how its public relations department was closely interwoven with its engineering, sales, service and distribution departments to produce "an excelling combination of personal and business service." The public relations activities, it was shown, were manifested in three clearly defined and interwoven lines, training of personnel, enlightenment of the public and the meriting of good-will through service in the broadest sense of that term.

Snoqualmie Falls, Wash., the site of one of the Puget Sound company's older hydro-electric plants, on one of the main highway passes through the Cascade Mountains. A portion of the company's property at this location has been turned into a park for the benefit of passing motorists.

Discussing the company's relations with its employees, the exhibit described insurance and pension plans in effect, safety first activities, merit system of wage adjustments, public speaking and education, vacation, athletic and entertainment schemes, mutual benefit association and many other plans and practices designed to produce an intelligent, informed and satisfied personnel.

Various activities and policies making for a healthy relation with its public were described and illustrated in the second portion of the exhibit. These included newspaper, billboard and radio advertising, attention to radio interference complaints, broad credit and collection policies, and a variety of ways in which co-operation with community clubs and organizations for civic betterment had been fostered.

The third part of the exhibit was devoted to showing how good-will had been earned by excelling service rendered. Many phases of farm electrification and a number of unusual or extraordinary results in developing its market were pointed to as the result of the company's fundamental policy of rendering the best of service at the lowest possible rates and the effect of


Fulfilling a VISION
PUGET SOUND
Power & Light Company
BARRIERS DRILLED AWAY
Great Northern's New Tunnel and Electrification a Triumph of Vision, Engineering and Electrical Advancement
PUGET SOUND
Power & Light Company
TALK AND WRITE WENATCHEE APPLES
PUGET SOUND
Power & Light Company
One of Washington's "Best Customers"!
PUGET SOUND
Power & Light Company
OUR STOCK IS A GOOD INVESTMENT

Typical newspaper advertisements in an institutional campaign conducted during the past year by the Puget Sound company.

these activities on the growth and prosperity of the territory was shown. All items discussed were illustrated with pictures or supported by newspaper clippings or documents, among which were a number of letters from public officials and newspaper editors evidencing the good-will enjoyed by the company in local communities. A comprehensive exhibit of all types of advertising and literature used was included.

Last year the company won the Charles A. Coffin Medal. The award to one company of both the Coffin Medal and the Forbes Cup is believed to be unique in the experience thus far recorded in the awarding of these prizes.

El Paso Electric Company Awarded 1928 Coffin Gold Medal

FOR ITS remarkable general success in rendering efficient service to its customers, in stimulating public goodwill, and in prosecuting an extremely far-sighted policy of improvement and expansion, the El Paso Electric Company, El Paso, Texas, has been awarded the 1928 Charles A. Coffin gold medal. The award was made at the annual convention of the National Electric Light Association at Atlantic City, June 6. In addition to the gold medal, the El Paso company, which is the seventh company to receive the Coffin award, has been granted $1,000 for its employees' benefit fund.

With the granting of the award special notice was given to the fact that the El Paso company has had unusual obstacles to surmount due to the type of territory which it serves.

The two urban centers which it serves, El Paso, Texas, and Juarez, Mexico, are so widely separated that inter-connection has not been possible, and half of the company's customers are Mexicans.

The report submitted by the company to the committee on awards pointed to the fact that the company's average domestic load showed a gain of 6.9 per cent during 1928, and that a total of 1,381 new customers had been secured during the year. Important additions were made to street lighting circuits and a greater number of electric sign loads was obtained than during the previous year. Other lighting installations included the illumination of football fields for night playing, revolving beacons and floodlighting for aviation landing fields, electric lighting of ponds used for frog culture, and outdoor Christmas tree lighting. The report showed that the overall efficiency of the power plant was increased 2.4 per cent during the year, while the cost of a net kilowatt-hour delivered at the switchboard was decreased 8.28 per cent. "Better Service" slips, newspaper stories and letters from customers were submitted by the company to show an unusual degree of improvement in the company's relations with the public. The company's safety record showed that in the distribution department employees had worked for a total of 204,944 man hours and had operated a fleet of 30 company automobiles and line trucks a distance of 366,005 miles during the year without a lost-time accident.

The report described a well organized plan to develop the rural sections served by the El Paso company. Long line extensions were built during the year to serve a large irrigation project resulting in rapid settlement of the sections traversed. Numerous farms, dairies, cotton gins, cottonseed oil mills, and various other types of rural customers had been obtained. The company is encouraging a movement to place in cultivation large tracts of arid table lands in the territory it serves by pumping water to those levels by means of electric pumps.

F. J. Gannon

Manager of the El Paso Electric Company, to whom the Coffin Medal was presented at the N.E.L.A. convention.

In making the presentation, Preston S. Arkwright, president of the N.E.L.A., said:

"Despite its comparatively small size, the many limitations and difficulties surrounding its growth, this company has grown, has prospered and has played a part which your committee feels constitutes a distinguished contribution to the development of light and power for the convenience of the public and the benefit of the industry. The committee hopes this award will be an inspiration to the managers of the smaller companies operating throughout the nation.

"In every field, general administration, commercial activity and engineering, a splendid job has been done by an active, aggressive management. I think it is no exaggeration to say that the fact that this company with notable resolution and tenacity has submitted statements of its accomplishments has in no small measure helped in making its fine record in all fields."

In 1922, the year the Charles A. Coffin Foundation was established by the General Electric Company, the medal was awarded to the Southern California Edison Company. Last year the Puget Sound Power & Light Company won the award.

F. J. Gannon, manager of the El Paso Electric Company, received the award on behalf of his company. The committee on awards consisted of Mr. Arkwright, R. H. Ballard, president, Southern California Edison Company, and Dr. Samuel W. Stratton, president, Massachusetts Institute of Technology.

18,000-Kw. Steam Plant to Be Built Near Phoenix

Contract entered into by the Central Arizona Light & Power Company, Phoenix, and the Salt River Valley Water Users' Association for the construction of an 18,000-kw. steam plant near Phoenix, has been approved and signed by the Secretary of the Interior.

Under the terms of the contract the power company will build and pay for this plant immediately. Until Nov. 1, 1932, the Water Users' Association will pay all carrying charges and operating costs of the plant, for which it will receive the entire output of the plant during that period. Upon that date the power company will take over one-third of the carrying charges and operating expense for the next three years, receiving in return one-third of the power output. At the end of the second period the power company will take over another one-third of the operating expense, and receive another one-third of the power output. At the end of eight years the power company will take over the last third, will pay all carrying charges and operating expenses, and will receive all of the output it needs to meet the demands upon it. The Water Users' Association will have the call on all excess power that the company does not need and will have the right to have the capacity of the plant increased and receive the output from this increase.

The contract further provides that the power company on one year's notice may take over any additional part or all of the output of the plant.

N.E.L.A. Convention to Be Held in San Francisco

San Francisco will be the scene of the annual convention of the National Electric Light Association to be held in June, 1930, according to announcement made at the 52nd annual convention held at Atlantic City June 3-7. Actual dates have not yet been decided upon.

The meeting will be held in the Civic Auditorium, and plans are being made for the largest manufacturers' exhibit ever presented at an N.E.L.A. convention outside of Atlantic City.

California to Control All Dams Within State

State control and supervision over all dams in the State of California through authority vested in the department of public works and administered by the state engineer are provided for in an act recently signed by the governor.

The bill, to a large extent, is a result of public sentiment aroused by the St. Francis dam failure and is designed to include dams built by municipalities which heretofore had not been subject to any state supervision. Dams owned by public utilities are removed from the jurisdiction of the California Railroad Commission and placed under the control of the state engineer by this act, which is intended to centralize all state control of dam structures.

All dams which are 15 ft. high or impound more than 10 acre-ft. of water, either built or to be built, are included within the scope of the bill. The legislature based its authority for passage of the act on the police power of the state to protect lives and property.

All existing dams are to be studied within the next three years, and either approved or ordered changed to comply with safety requirements. Dams built in the future or alterations made to existing dams which affect their safety must be approved by the state engineer as to plans and specifications before work can be started. Administration of the act is to be carried on under the office of the state engineer except that, upon request of any owner, the department may appoint a consulting board to report on the safety measures involved, the costs of such report to be paid by the owner.

The act also provides for supervision over maintenance and operation of all dams, including the taking of any emergency steps necessary to protect life and property.

Second Unit Installed in Big Creek Plant No. 8

Completing the present series of hydro-electric plants on its Big Creek-San Joaquin development project, the Southern California Edison Company on June 1 placed in operation a 40,000-hp. generating unit in its plant No. 8 at the junction of Big Creek and the San Joaquin River. This is the second unit in plant 8, the first, rated at 32,200 hp., having been installed in 1921. This second unit was placed in plant No. 8 in order to utilize the additional water made available through the development of the Shaver Lake 138,000 acre-ft. reservoir and the Big Creek 2-A plant. Both plants 2 and 2-A discharge into the same afterbay, which in turn becomes the forebay of plant No. 8.

The addition of the 40,000-hp. unit has increased to 1,112,760 hp. the total installed capacity of the company's system, according to George C. Ward, executive vice-president.

Fellowship and New Stamp Among Edison Honors

Among the honors being paid Thomas Alva Edison during Light's Golden Jubilee to commemorate the fiftieth anniversary of the invention of the incandescent lamp, are the issuance of a new two-cent postage stamp by the Post Office Department and the establishment of an Edison Fellowship for Research in the research laboratory of the General Electric Company at Schenectady, N. Y.

The new stamp is the same size as the standard two-cent stamp and is printed in red ink. The central design is a picture of the original lamp with rays issuing therefrom. Immediately above and partly encircling the lamp is a ribbon with the words "Edison's First Lamp"; above this and reaching the top of the stamp is a semi-circular panel with the words "United States Postage" in white Roman letters. In both upper coners are ribbon scrolls, with the year "1879" at the left and "1929" at the right. On either side of the lamp and through the rays of light appears the legend: "Electric Light's Golden Jubilee." The white numeral "2" appears in both lower corners within dark circles, which are connected by a dark panel forming the base of the stamp and containing the word "Cents" in white Roman letters.

The Edison commemorative stamp first was placed on sale June 5, 1929, at the post office at Menlo Park, N. J., where the laboratory in which the lamp was invented was situated.

The object of the Edison Fellowship is to help determine the fitness of the Fellow for industrial or scientific research by arranging for a year's research in the General Electric laboratory. The opportunity will be given to the selected candidate who has adequate training and who has done sufficient original work to have indicated an aptitude for research. The year's fellowship carries a grant of $3,000. The selection from applicants will be made

by the National Research Council with the advice of the director of research of the General Electric Company.

The accompanying illustration shows the medallion, designed by Franklin Booth, which has been adopted as the official insignia for Light's Golden Jubilee. It is pointed out that by the inscription, "Dedicated to Better Vision," on the obverse of the medallion which shows the progress of the electric lamp from its inception to the perfected type of today, is meant not only better vision as regards sight, but also the kind of vision that enabled Edison to proceed in spite of difficulties and obstacles, and to bring to a successful conclusion the inventions that have been of such benefit to humanity.

Efforts to Halt Centralia Municipal Project Fail

In a decision handed down in the Superior Court of Lewis County, Wash., by Judge George B. Simpson, the special election held in Centralia, Wash., in February, at which the city voted $1,000,000 for the construction of a municipal hydro-electric plant on the Nisqually River, was held to have been legal and valid. The decision was rendered in a suit brought against the city by Lloyd E. Dunn, who contended that the notice of the special election was improperly published, thus rendering the election invalid. Mr. Dunn announced through counsel that he would appeal the case to the state supreme court.

An effort was made to re-open the suit when A. S. Kresky and eleven other Centralians applied for an injunction to restrain the city from proceeding with the proposed development. The application was denied by Judge Simpson.

Bids have been received by the city for the construction of the 9½-mile canal in connection with the project.

Seattle Abandons Plan for Dam at Hanging Rock

The utilities committee of the Seattle City Council has voted to abandon the plan for a $3,000,000 dam at Hanging Rock on the Skagit River and instead will raise the crib dam now serving the Gorge Creek power plant 2 ft. at an estimated cost of $25,000.

In pursuance of the program for development of the city's Skagit River power project, contract has been let to Rumsey & Jordan to drive a tunnel from the Diablo Dam across a bend of the river to the site of the proposed power house at Reflector Bar and to line the tunnel with concrete, the contractor to furnish all labor and material. The contract was awarded on a bid of $544,894.

Los Angeles Voters Defeat Water and Power Bond Issues—At the election held in Los Angeles June 4 the voters defeated proposed bond issues totaling $40,000,000, one issue covering $22,500,000 for water bonds and the other $17,500,000 for power bonds. A two-thirds majority was required for the passage of the issue and the vote stood as follows: For the water bonds —147,335, against—86,981; for the power bonds—110,149, against—109,510.

Boulder Dam Washington Conference Ends With No Agreement Reached

Washington Correspondence

THE conference which opened May 28 in Washington, D. C., between representatives of California, Arizona and Nevada, was adjourned June 14 without an agreement having been reached as to the division of the waters of the Colorado River. Although it is still believed that Arizona will seek to determine her rights through Supreme Court action, the delegates seemed in closer accord at the end of the session than ever before. The next meeting will be held on Oct. 14 in Santa Fe, N. M.

The principal discussion hinged about the Gila River, which Arizona claims is not a part of the Colorado River system for purposes of the Boulder Canyon Project Act, because it joins the main stream close to the Mexican border below all contemplated diversion. Looking ahead 50 or 100 years when the seven states are using their quota of allocated waters, if there is no surplus left for Mexico, some of the Mexican demand will have to be taken from the state apportionments. Arizona's contention is that to include the Gila in the system would deprive that state of rights on the main stream if and when this shortage begins to be felt. In other words, Arizona claims exclusive rights to the Gila and holds that such rights shall not limit the share of water to be received from the Colorado River as divided in the agreement.

At the close of the conference Col. W. J. Donovan, chairman, submitted a simplified proposal for the state commissioners to consider during the interim before the Santa Fe meeting. His statement reads:

"The following formula is submitted not as a recommendation but simply as a suggestion which the states might accept as a basis in attempting to reach a conclusion. This formula is based on the principle that, as nearly as may be, the waters of the Lower Basin shall be equally divided between Arizona and California. This principle must be kept in mind in considering the feasibility of this plan." Colonel Donovan proposed that:

"1. The Gila River shall go to Arizona.

"2. Arizona may use any of the unused waters of her tributaries other than the Gila, releasing therefor equivalent water from her main stream waters.

"3. Of the 7,500,000 acre-ft. of water on the main stream apportioned to the Lower Basin by Paragraph (a) of Article III of the Colorado River Compact, 300,000 shall be apportioned to Nevada.

"4. Of the 7,200,000 acre-ft. remaining and of the 1,000,000 acre-ft. provided for in Paragraph (b) of Article III of the Colorado River Compact, Arizona and California shall each receive such a percentage as may seem fair and equitable.

"5. The additional available waters in the Lower Basin shall be divided equally between Arizona and California.

"6. The Mexican burden shall be borne equally by Arizona and California."

On June 21 the Boulder Canyon Project Act, which was signed by President Coolidge on Dec. 21, 1928, became effective. Under the terms of the bill the act could not become effective until the Colorado River Compact had been approved by the seven basin states, or if not so approved within six months from the date of the signing of the act, then approval of six, one of which was California, would be deemed sufficient. As Arizona has not yet signed the compact, the bill becomes effective under six-state approval.

Kw.-Hr. Contest Prizes Won by Western Companies

The West occupied a prominent place when prizes were awarded in the Kilowatt-Hour Contest conducted by the Commercial Section, N.E.L.A., for two Western companies won first and second prizes and two were given honorable mention.

The contest was participated in by sales departments of Class A companies, and the prizes were offered for the largest increase in total average annual kilowatt-hour consumption per residence customer, with the objective of attracting attention to the possibilities of increasing domestic use of electricity.

The contest was divided into three classes, based on the total average consumption of each company for the year 1927. The first prize in Class A, which included companies with an average of 451 kw.-hr. or over, was won by the Cheney (Wash.) Light & Power Company, which developed an average increase from 491 to 686. The San Joaquin Light & Power Corporation, Fresno, Calif., won the second prize for an increase from 625 to 724. The Portland (Ore.) Electric Power Company won honorable mention in this class with an increase of 93.

In Class C, for companies with an average of 350 kw.-hr. or under, the Southern Colorado Power Company, Pueblo, was given honorable mention for an increase of 54.

Three first prizes of $2,000 each and three second prizes of $1,000 were awarded.

Agriculturist Appointed by Washington Company

The appointment of Waldo W. Skuse as agriculturist for The Washington Water Power Company to advise with farmers on farm electrification has been announced by Lewis A. Lewis, assistant general manager in charge of sales. The work will relate to all types of farming to which electricity can be profitably applied, and will be extended

WALDO W. SKUSE

throughout the territory served by the company in eastern Washington and northern Idaho.

Mr. Skuse, a graduate of the Washington State College in civil engineering and agriculture, has served as assistant county agent at Spokane, Wash., and as county agent at Helena, Mont., and Lewiston, Idaho, for three years and five years, respectively. During the last five years he has been engaged in the farm equipment business in Lewiston and Walla Walla.

In announcing the appointment Mr. Lewis said: "Mr. Skuse's familiarity with the various kinds of farm equipment, his educational training and his contact with farming problems in three districts of the Northwest have resulted in his selection as a man eminently fitted to study farm electrification on the system of The Washington Water Power Company. The appointment of Mr. Skuse as agriculturist for this company is an outgrowth of the work of the Washington Committee on the Relation of Electricity to Agriculture which was begun four years ago."

P. G. and E. Company to Furnish Street Lighting System for Oroville, Calif.—Approval of the California Railroad Commission has been given to a contract between the City of Oroville and the Pacific Gas and Electric Company for the furnishing of electric energy for an ornamental street lighting system during a period of five years. Under the terms of the contract the Pacific Gas and Electric Company will construct the lighting system and the city will have the option of purchasing it.

Puget Sound Company's Tulip Telechron Wins Prize in Bellingham Parade

SECOND prize was awarded this float, which was entered by the Puget Sound Power & Light Company in the parades held during the recent Tulip Festival at Bellingham, Wash. Brown paper tulips to represent mahogany fashioned the big Telechron clock. The tulips were all made by hand by the women in the employ of the Puget Sound Company's Bellingham office.

The clock, 19 ft. long, 7 ft. high and 6 ft. wide, was outlined in electric lights and used in both the day and night parades. It was kept running continually, and a cash prize was offered to anoyne who could detect any variation in time. The clock mechanism consisted of a series of wooden pulleys and belts operating the second and minute hands connected to a battery operated by a 32-volt meter, and the hour hand was moved forward from time to time by the operator inside the float. This type of construction does not guarantee exact time continuously, but it answered the purpose very well for the possible hour that the parade was in progress.

Both mechanism and float were designed and worked out by Frank Hurley, sales manager of the Ferndale office of the Puget Sound company.

Amount Set for San Francisco's Purchase of Great Western and P. G. and E. Systems

ON JUNE 17 the California Railroad Commission fixed the price to be paid by the City and County of San Francisco for the electric systems of the Great Western Power Company and the Pacific Gas and Electric Company, within the city, as they existed on Feb. 11, 1924, at $11,815,000 and $26,685,000, respectively. The Great Western Power Company had evaluated its property at approximately $30,000,000, and the Pacific Gas and Electric Company had set the value of its holdings at $60,000,000, while the city had contended that $9,000,000 was a fair price for the former and $19,000,000 for the latter.

The property of the Pacific Gas and Electric Company included a steam generating plant of 85,000-hp. capacity, nine substations, more than 20,000 poles and more than 3,500 miles of wire and cable. The cost of reproducing this property in 1924 was estimated by the commission's engineers at more than $25,000,000. After making deductions for depreciation and additions for the value of the business, the commission fixed the compensation to be paid by the city at $23,635,000, although the claim of the company exceeded $32,000,000. The commission allowed an additional $3,050,000 to cover severage damage, for which the company had claimed $27,000,000, while the city contended that $457,000 would be sufficient.

The Great Western Power Company's property within the city included two steam plants with a total capacity of about 30,000 hp., four substations, 5,000 poles and more than 800 miles of wire and cable. It was estimated by the commission's engineers that the cost of reconstructing this property in 1924 would have been $7,552,000. After making deductions for depreciation and an additional allowance for the value of the business, the commission fixed the compensation to be paid for this property, and the business attached, at $8,440,000, with severance damage of $3,375,000. The company had set this damage at $15,000,000, while the city had placed the figure at $2,766,000.

Claims for just compensation had been based by both companies principally upon the loss of net revenue which each would suffer through having its San Francisco property and business cut off from its entire system, but the commission based its findings upon an inventory and appraisal of the physical properties with an additional allowance for the value of the business connected thereto.

Hearings before the commission and a consideration of the evidence have occupied the last five years, and the additional expense to the commission, which amounted to more than $300,000, has been paid by the City of San Francisco.

A further investigation will be necessary to determine the increase in the value of the properties by reason of additions and improvements since Feb. 11, 1924, the Pacific Gas and Electric Company estimating its expenditures for betterments at $10,000,000, and the Great Western Power Company at $3,500,000 up to the present time.

Both companies have expressed their intention to ask the commission for a rehearing and, if that is denied, to appeal to the State Supreme Court for a writ of review.

10,000,000-Cp. Beacon at El Paso Dedicated

With appropriate ceremony the Pasotex aviation beacon on Mt. Franklin, El Paso, Texas, was dedicated on May 31.

The new beacon is served by the El Paso Electric Company over a 23-kv. line. This line ascends the steepest and most rugged side of the mountain, which offered the shortest and most feasible route, with the result that transformers and other materials used in this construction had to be hauled up the mountain side by hand. Poles were dragged to their respective locations and set in holes blasted out of solid rock.

The Pasotex beacon, whose light is visible for a distance of from 100 to 150 miles, is similar in construction to the beacon on Mt. Diablo near San Francisco Bay, in that it is a revolving beacon of 10,000,000 cp., equipped with two lamps, one of which is automatically switched on in case the other fails. An astronomical clock turns the beacon on at sunset and off at sunrise. In addition, a 3,000,000-cp. stationary beacon has been installed. It will play constantly on the municipal airport landing field. Two 10-ft. Neon letters, "PE" (for Pasotex, El Paso), are mounted on the south side of the tower.

U. S. Geological Survey Reports on Power Generation in 1928

OF THE 87,849,579,000 kw.-hr. of electric power produced by public utility power plants in the United States in 1928, 34,695,691,000 kw.-hr. or 39.49 per cent, was generated by water power. In the Mountain states 3,917,948,000 kw.-hr. was generated, of which 87.5 per cent was produced by water power. This amounted to 9.88 per cent of the total U. S. water power. The total number of kilowatt-hours generated in the Pacific Coast states amounted to 11,381,594,000, of which 85.7 per cent was produced by water power, or 28.11 per cent of the total U. S. water power.

The total amount of power generated by the eleven Western states, 15,299,542,000 kw.-hr., amounted to 17.42 per cent of all power generated by public utility plants in the United States. This group was outranked only by the Middle Atlantic states (New York, New Jersey and Pennsylvania) with 25.79 per cent of the total, and the East North Central states (Ohio, Indiana, Illinois, Michigan and Wisconsin) with 23.84 per cent.

These figures are contained in a report compiled by the U. S. Geological Survey.

Below are given for the eleven Western states the total number of kilowatt-hours generated in each, the total number of kilowatt-hours generated by water power, and by fuel power, the number of operating companies, the number of plants and the capacity in kilowatts of generators operated by steam power and by water power.

	Total Power Kw.-hr.	Water Power Kw.-hr.	Fuel Power Kw.-hr.	Operating Cos.	Plants	Capacity of Generators in Kw. Operated by Steam Power	Capacity of Generators in Kw. Operated by Water Power
Montana	1,619,351,000	1,604,954,000	14,397,000	12	31	9,753	215,588
Idaho	947,709,000	945,623,000	2,086,000	19	45	1,960	222,270
Wyoming	83,931,000	29,492,000	54,439,000	21	34	30,702	10,501
Colorado	541,150,000	227,441,000	313,709,000	28	56	155,451	56,120
New Mexico	52,326,000	1,302,000	51,024,000	14	23	22,142	460
Arizona	335,755,000	285,223,000	50,532,000	13	28	19,696	68,448
Utah	282,791,000	281,347,000	1,444,000	19	54	36,000	95,229
Nevada	54,935,000	52,874,000	2,061,000	5	10	----------	9,110
Washington	2,361,024,000	2,234,855,000	126,169,000	24	67	109,647	496,001
Oregon	1,040,743,000	754,221,000	286,522,000	22	58	116,895	150,308
California	7,979,827,000	6,764,727,000	1,215,100,000	32	151	926,795	1,579,231

Permit Sought for Project at Priest Rapids, Wash.

Application has been filed by the Washington Irrigation and Development Company, Seattle, with the state hydraulics supervisor for permission to appropriate 50,000 sec.-ft. of water from the Columbia River in Grant and Yakima Counties, Wash.

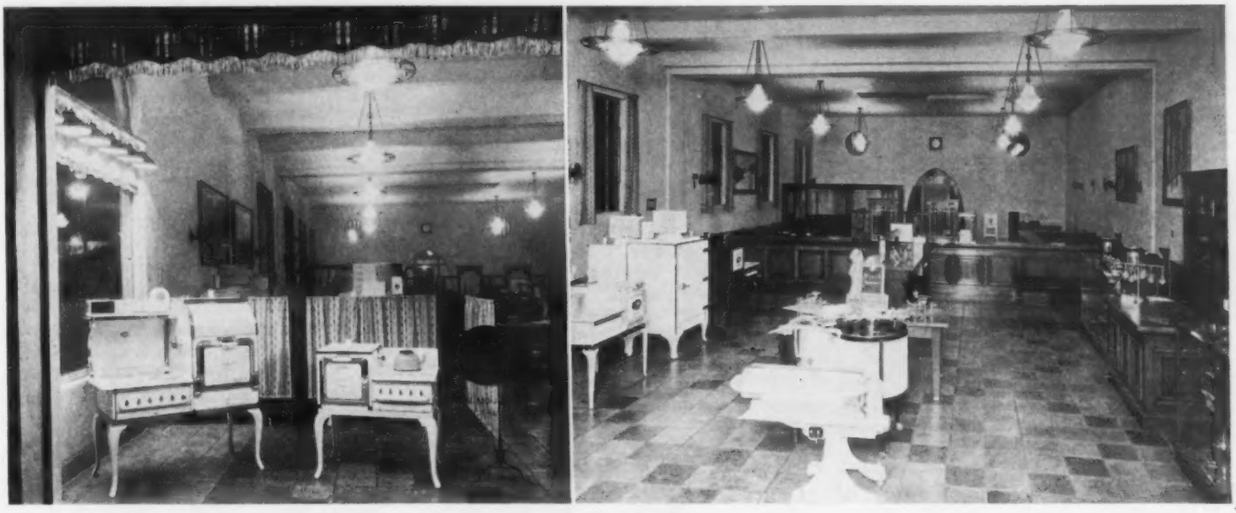
Plans call for the erection of a 90-ft. dam and the creation of a reservoir with a storage capacity of 140,000 acre-ft., which would inundate 5,715 acres of land. The power plant would house two units with total capacity of 450,000 hp. The first unit, which would be undertaken within the next two years provided the permit was obtained, would have an output of 200,000 hp. The total cost of the entire project is estimated at $41,242,000.

Equipment for Two Plants Specified by P. G. & E.

Specifications have been issued by the Pacific Gas and Electric Company, San Francisco, for bids on one 13,500-hp. vertical Francis turbine for 244-ft. maximum static head, and one 11,000-kva. a.c. generator for installation in its Salt Springs power plant; and also for two 36,000-hp., 1,190-ft. effective head double overhung impulse water wheels, and two 30,000-kva. a.c. generators for its Tiger Creek power plant.

These plants will be the first of a chain of four which will comprise the company's Mokelumne River project.

Ample Room for Display in Remodeled District Offices



ALL Southern California Edison Company district offices have recently been remodeled to bring them up to modern standards. The San Bernardino office shown here is typical of such remodeling. The view at right shows the large area devoted to merchandising displays. Behind the counter are the desks of only those employees who wait on the public, and through the archway in the rear of the picture are the bookkeeping quarters. The view at the left is taken from the street. Window glass extending clear to the floor permits the type of display shown.

Municipal League Eulogizes Seattle Light Department

Following public dispute in which the Seattle light department management had been attacked by city officials of the Puget Sound Power & Light Company, the Municipal League, which headed the investigation of the department, has adopted a report of its city light committee which is eulogistic of the department and of its head, J. D. Ross. The report covers several months of careful scrutiny into the affairs of the city light department, particularly with regard to the Skagit River power development.

A board of experts, working under the direction of Mayor Frank Edwards and the City Council, now is making a thorough investigation of the entire light department, and prior to the action taken by the Municipal League an effort was made to prevent a vote of the membership being taken until after the submission of the experts' report.

San Joaquin Co. to Erect Two Office Buildings

Two new district office buildings are being built by the San Joaquin Light & Power Corporation, Fresno, Calif., one in Selma and the other in Madera, at a total estimated cost of $40,000. Both buildings are to be of reinforced concrete and will be completed this summer.

Important features of the building at Selma, which will be 44 x 80 ft., will be a most complete wiring layout, lighting of the most improved design, and numerous convenience outlets placed at various points in anticipation of the use of electricity for fans, motored office equipment, heaters, and for demonstration of appliances on display in the lobby.

In Madera the company will build an office 40 x 80 ft. and a warehouse building of the same dimensions.

Water Power License Fee Imposed by Washington

A licensing act has been passed by the Washington Legislature providing that every person, firm and private or municipal corporation claiming the right to use water for power development shall pay in advance an annual license fee based upon the theoretical water power claimed. The rate is fixed at 10 cents per horsepower up to 1,000 hp., 2 cents per horsepower from 1,000 to 10,000 hp., and 1 cent per horsepower in excess of 10,000 hp. The act becomes effective July 1 of this year, and payments are to be made on Jan. 1 of each year.

The City of Seattle, through a license under the Federal Water Power Act in connection with its Skagit River development, is subject to the annual fees imposed by the new licensing act.

News Briefs

Examination for Diesel-Electric Engineman to Be Held—The United States Civil Service Commission has announced an examination for first-class Diesel-electric engineman to fill a vacancy in the position of power plant operative, Government Printing Office, Washington, D. C., and vacancies occurring in positions requiring similar qualifications. Applications must be filed with the commission at Washington not later than July 10. The duties are: To be responsible under the chief engineer for the operation and maintenance of two Diesel engine-driven generator units now in process of installation, and to instruct other operatives in the power plant in the operation, care and repair of these units. As these generating sets constitute standby equipment only, the operator will be required to operate such auxiliary power plant equipment as sychronous converters, air compressors, refrigerating machinery, steam and electric-drive pumps, storage batteries and related equipment.

Southern California Edison Company Constructs 220-Kv. Line—Construction has been begun by the Southern California Edison Company on an 11-mile, 220-kv. transmission line from its Lighthipe substation to a major substation of 200,000-hp. capacity between Torrance and Redondo Beach. The new distribution center will be known as La Fresa substation. An appropriation of $575,000 has been made for the substation building and $370,430 for the double-circuit transmission line. Contract for the steel towers to be used in the contsruction of the transmission line was awarded to the Emsco Derrick & Equipment Company, Los Angeles.

Puget Sound Company Sues for Lightning Damage—Suit has been brought by the Puget Sound Power & Light Company against fifteen insurance companies to recover $24,702 damages alleged to have resulted when the company's power house at Electron was struck by lightning June 20, 1928. The light company alleges it had limited policies, with coverage for lightning, with the respective defendants and declares the insurance firms claim that there was no loss which involved their coverage.

Two Municipal Plants Purchased by Utility—The National Utilities Corporation, Ltd., has purchased the municipal power plants at Alberni and Port Alberni, on Vancouver Island, B. C., for $8,000 and $125,000 respectively. The sales were approved by the voters of each municipality by large majorities.

International Water Commission to Meet in Mexico City Aug. 20—Important decisions are expected to grow out of the meeting of the International Water Commission to be held in Mexico City on Aug. 20. The one joint meeting of the commission and the separate meetings of the American and Mexican sections which have been held thus far have dealt only with plans for gathering data. It is believed that all necessary information now is in hand and the full commission is in a position to discuss recommendations in connection with the international problems arising out of the use of the waters of the Colorado and the Rio Grande Rivers.

Utah Power & Light Company Increases Capacity of Jordan Steam Plant—Construction work has been commenced by the Utah Power & Light Company on an addition to its Jordan steam-electric generating station in Salt Lake City. The installation of two additional boilers with a heating surface of 18,000 sq.ft. each will increase the capacity of the plant from 20,000 kw. to 41,000 kw. The work, which will involve an expenditure of approximately $750,000, is expected to be completed during the early fall.

Public Utilities California Corporation Acquires Another Small Property—Permission has been granted by the California Railroad Commission to J. M. Hotchkiss, and Hobbs, Wall & Company, to transfer the so-called J. M. Hotchkiss Electric Company properties in Crescent City and vicinity, Del Norte County, to the Public Utilities California Corporation. The purchaser has been authorized to issue $80,000 of its capital stock in payment therefor.

Small Oregon Utility Bought by American Engineering Corporation—Sale of the Hermiston Light & Power Company, serving Hermiston, Echo, Umatilla and Stanfield, Ore., to the American Engineering and Management Corporation has been announced by Frank Ralph, vice-president of the Hermiston company. The consideration given was $190,000.

Contract Let for Stave Lake Transmission Towers—Contract for the construction of steel towers for the transmission line from Stave Lake over the Pitt River has been awarded by the British Columbia Electric Railway Company to Pacific Engineers, Ltd., Van couver, for $32,000.

Rocky Mountain Committee Changes Address—Announcement has been made by the Rocky Mountain Committee on Public Utility Information that it has moved its headquarters to 366-7 Gas and Electric Building, Denver.

FINANCIAL NEWS

30,000 Shares of Stock Sold in Eleven Days

In its recent sale of shares of $6 cumulative preferred stock in limited amounts to customers and employees, The Washington Water Power Company, Spokane, sold the entire allotment of 30,000 shares in eleven business days, according to the report of W. H. Ude, director of public relations, in charge of the customer-ownership campaign. At the close of the campaign the total issue had been subscribed for by 4,952 customers and employees.

The majority of the stock was sold by employees throughout the system, a total of 423 or 36.1 per cent of the employees selling 17,401 shares. A total of 5,043 shares of the stock were subscribed for by 1,333 employees and members of their families. The sale of the stock to the public was limited to 50 shares for cash or 25 shares on partial payment, the stock being sold at $102 per share plus accrued dividend.

City Votes $750,000 Bonds for Municipal System

By a margin of 49 votes the City of Bremerton, Wash., at a special election voted in favor of a $750,000 bond issue for the development of a municipal electric power distribution system.

At the present time the city is served by the Puget Sound Power & Light Company under a franchise which expires in 1932 and which gives the city the right to take over the distribution system at a price to be fixed by appraisers. The proceeds of the bond issue will be used either to purchase the present system or to install a new system, the power under either plan to be obtained from the Tacoma municipal plant.

Utah P. & L. Co. Offers 30,000 Shares of Stock

An offering of 30,000 shares of the Utah Power & Light Company's $6 preferred stock recently was placed on the market. This stock is selling at $101 per share plus accrued interest, and the proceeds of the issue will be used to finance construction work which is included in the company's general program for the next several months.

The Utah Power & Light Company now has approximately 11,000 holders of its preferred stock in the territory in which it serves—Utah, Idaho, Colorado and Wyoming. Regular quarterly dividends have been paid consecutively for the past sixteen years.

Pasadena, Calif., Reduces Bonded Indebtedness

Purchase of a block of $12,500 worth of its own bonds by the Municipal Light and Power Department of the City of Pasadena, Calif., has brought the bonded indebtedness of the utility down to $600,000, according to a statement made recently by Benjamin F. DeLanty, general manager.

This $12,500 is a part of the 1908 issue. Within the past two or three months out of its surplus the department has purchased $63,000 worth of outstanding bonds, while during the present fiscal year an additional $91,133 worth of bonds has been retired. At the outset of the fiscal year the department's bonded indebtedness was $760,000. The total amount of bonds issued for the light department amounted to $1,492,000.

Sierra & San Francisco Power Company to Float Bond Issue—Authority has been granted by the California Railroad Commission to the Sierra & San Francisco Power Company, a property of the Pacific Gas and Electric Company, to issue and sell on or before July 31, 1929, at not less than 99 per cent of face value, plus accrued interest, $500,000 of first mortgage 5 per cent gold bonds, due Aug. 1, 1949, and to use the proceeds for the purpose of financing in part construction expenditures.

Northwest Electric Light & Power Association

Program Shows Outline of Convention Sessions to Be Reported Later

The dates this year of the Seattle convention of the Northwest Electric Light & Power Association, falling as they do on the last few days of the month of June, make impossible the publishing of any report of the convention in this issue of Electrical West. A full report of convention activities will appear therefore in the Aug. 1 issue. The program of the four general sessions as they were scheduled to be conducted follows:

First General Session

Wednesday, June 26, 9:30 a.m.

Call to Order.....President R. M. Boykin
Address of Welcome.....A. W. Leonard
President, Puget Sound Power & Light Co.
Response.....Franklin T. Griffith
President, Portland Electric Power Co.
President's Address.....R. M. Boykin
Manager, Puget Sound Power & Light Co.
Treasurer's Report.....W. E. Best
Puget Sound Power & Light Co.
Secretary's Report.....Berkeley Snow
Electrical West
Announcement of Committee Appointments
Election of Nominating Committee
Address.....Dr. Henry A. Burd
College of Business Administration University of Washington
"Greetings from Celebrated Men".....
Talking Motion Picture

Second General Session

Accounting—Commercial

Wednesday June 26, 2:00 p.m.

Report of Accounting Section Chairman
A. E. Janssen
Idaho Power Co.
Address.....Prof. Karl E. Lieb
University of Washington
Report of Commercial Section Chairman.....Lewis A. Lewis
Washington Water Power Co.
Reports of Committee Chairmen
Accident Prevention Demonstration and Insull Medal Presentation.....
John B. Fisken
Washington Water Power Co.

Third General Session

Public Relations—Administrative

Thursday, June 27, 9:30 a.m.

Report of Public Relations Section Chairman.....W. H. Ude
Washington Water Power Co.
Comments on Public Relations.....
W. H. McGrath
Vice-President, Puget Sound Power & Light Co.
Short talks by winners in Public Speaking Contest on "The Public Utility a Good Citizen" and "How Can I Best Serve Our Customers?"
Essays, "Pleasing Mr. and Mrs. Public," by contest winners, introduced by Mrs. Nell Laws, Chairman of Women's Committee, and Leroy Bourne, Chairman of Committee on Employee's Relations With the Public.
Address.....George E. Erb
Former Chairman of Idaho Public Utilities Commission, Lewiston, Idaho
Address.....J. F. Owens
Vice-President, National Electric Light Assn.
Presentation of awards in Public Speaking and Essay Contests
Report of Committees on Resolutions, Credentials and Nominations
Election of Officers
Reports of Special Committees

Fourth General Session

Engineering

Friday, June 28, 9:30 a.m.

On board S. S. Princess Patricia en route to Victoria, B. C.
Report of Engineering Section Chairman.....D. W. Proebstel
Portland Electric Power Co.
Reports of Committee Chairmen
Several addresses by prominent members of the N.E.L.A.

Personals

C. M. Brewer Succeeds P. O. Crawford, Resigned

PERRY O. CRAWFORD, since Sept. 1, 1926, vice-president and general manager of The California Oregon Power Company, with headquarters in Medford, Ore., has resigned to become president of the American Utilities Service Company, a public utility company recently organized, with headquarters in Chicago. Mr. Crawford took up his new duties on June 1.

On the same date **C. M. Brewer** succeeded to the title and position left vacant by Mr. Crawford. Mr. Brewer will continue as vice-president and general manager of the Mountain States Power Company, a capacity in which he has served since Jan. 1, 1919. Both companies are operated by the Byllesby Engineering and Management Corporation. Though the appointment of Mr. Brewer places these two companies under one executive, each company is to retain its corporate identity, and as far as is now known, no departments are to be consolidated.

Mr. Crawford, a native of Ohio, was graduated in electrical engineering from Stanford University, Palo Alto, Calif., in 1907. Following his graduation he

P. O. CRAWFORD

constructed three hydro-electric power plants for the Northern California Power Company, now a part of the Pacific Gas and Electric Company's system. In April, 1912, he became assistant engineer on the Jadl-us Suraj hydro-electric project in Kabul, Afghanistan, and at the expiration of his three-year contract returned to Stanford University and spent some time in high voltage research under the direction of Dr. Harris J. Ryan. In March, 1916, he joined The California Oregon Power Company as construction engineer in charge of construction on Copco No. 1 hydro-electric plant. Upon completion of this project, Mr. Crawford became successively chief engineer, vice-president and chief engineer, and vice-president and general manager.

Mr. Brewer has been connected with the Byllesby organization since August, 1909, serving as sales manager of the Muskogee Gas and Electric Company, Oklahoma City, and later as sales manager of the Mankato, Minn., office of the Northern States Power Company. In January, 1911, he came to the Pacific Coast to become sales manager of the new business department of the gas

C. M. BREWER

company in Everett, Wash., and later was manager of the Sandpoint division of the company. In June, 1912, he became manager of the Western States Gas & Electric Company, Richmond, Calif., and remained in that capacity until he was appointed vice-president and general manager of the Mountain States Power Company.

As the vice-president and general manager of the two companies named, Mr. Brewer will have charge of utility properties having a total generating capacity of 115,258 kw. and serving 158 communities in the States of California, Oregon, Washington, Idaho, Montana, Wyoming and South Dakota.

F. E. Bonner Federal Power Executive at Washington

FRANK E. BONNER, who has been district engineer in San Francisco for the United States Forest Service, has been appointed executive secretary of the Federal Power Commission, with headquarters in Washington, D. C. He succeeds O. C. Merrill, who has resigned from the Federal Power Commission to accept the permanent chairmanship of the American section of the World Power Conference.

Mr. Bonner has been stationed at San Francisco since October, 1922, where he has served as district engineer for the U. S. Forest Service and as representative of the Federal Power Commission. In this capacity he has had general charge of the water power policy of the United States Government covering some of the most important Western projects, while at the same time directing the forest highway program of California. He has also served the State of California as a member of its advisory committee on water resources for the past several years and was a member of the committee appointed by the governor to investigate the failure of the St. Francis Dam.

Mr. Bonner's connection with the United States Forest Service dates from 1909, when he joined the engineering staff of the service at Missoula, Mont.

His first work had to do with the map and survey division and with bridge design. In 1917 he was called to Washington, D. C., where he assumed charge of the division of maps and surveys for the entire service.

From April, 1918, to January, 1919, Mr. Bonner had charge of the division of engineering of the Forest Products Laboratory at Madison, Wis., his work consisting mainly of varied technical research for the War Department, Navy Department, and allied governments. Following this experience he was made district engineer of district 2, covering the Rocky Mountain states, and in July, 1919, was again called to Washington to become engineering assistant to the chief engineer of the Forest Service, where his duties had to do with the general direction of water power development, highway construction, and other engineering work. With the passage of the Federal Water Power Act in 1920 the work of the engineering department of the U. S. Forest Service was greatly increased because of the demands of the Federal Power Commission upon the staff.

FRANK E. BONNER

Mr. Bonner is a native of Montana. His early experience, following his education in the College of Civil Engineering of the University of Montana, was acquired in his native state where, among other employments, he served the Missoula Light & Water Company.

Last year Mr. Bonner was awarded an honorary degree in engineering by the University of Montana. He is a member of the American Society of Civil Engineers, in which organization he has been very active. He is also the author of a volume on "The Water Powers of California," which was published by the Federal Power Commission in 1928.

Southern Sierras Executives Given Advancement

A. B. WEST, president of The Southern Sierras Power Company, Riverside, Calif., and other associated subsidiary companies, has been selected as president and general manager of the Nevada-California Electric Corporation, the controlling company, with headquarters in Denver, Colo. He has resigned as general manager but will continue as president of the operating companies and plans to spend much time in California in connection with his duties in that capacity. He succeeds E. S. Kassler, who has resigned to devote more time to his private affairs and to travel.

Mr. West's service with the Nevada-California company and associated companies covers a period of 22 years. Starting in 1907 as clerk in the office of Potter & Banks, Denver, attorneys for The Nevada-California Power Company, the parent company of the present organization, the following year he became a member of the firm of Potter & West, attorneys for the company, and in 1910 was elected a director of the Nevada-California company. In the fall of 1912, upon the organization of The Southern Sierras Power Company, he went to Los Angeles as vice-president and assistant to Delos A. Chappell, then president of the company. Upon the death of Mr. Chappell in 1916, Mr. West was appointed general manager of the associated companies, with headquarters in Riverside, to which

A. B. WEST

the offices of the company had been transferred. He was elected president of the Southern Sierras and other subsidiaries in 1922.

During the period of Mr. West's service, the group of companies has grown from a small organization with a total investment of some $5,000,000, serving the mining camps at Tonopah and Goldfield, to an enterprise with assets of more than $50,000,000.

F. O. Dolson, formerly assistant general manager, has been appointed general manager of The Southern Sierras Power Company, The Nevada-California Power Company, and the Yuma Utilities Company, succeeding Mr. West.

Mr. Dolson entered the employ of the organization in 1914 as inspector on the construction of the Imperial Valley line, and at the conclusion of that work was placed in charge of hydro plants on Bishop Creek. During 1916-17, in

F. O. DOLSON

addition to the supervision of hydro plant operation, he supervised the construction of the Rush Creek plant. On Jan. 1, 1918, he was transferred to Riverside as general superintendent of the entire electrical system of the associated companies, and four years later was elected vice-president of those companies. His appointment as assistant general manager followed in September, 1922.

D. H. Redinger, who has been resident engineer on the Big Creek-San Joaquin River hydro-electric project of the Southern California Edison Company, has brought the construction phase of the work to a close and is to be transferred July 1 to the operating department where he will become superintendent of the Big Creek division in full charge of the company's property in that division. **G. C. Heckman,** who was in charge of the electrical construction work under Mr. Redinger, will become assistant superintendent of the division in charge of maintenance, and **R. B. Lawton** will be assistant superitendent in charge of operation. Both will report to Mr. Redinger.

John T. Percival, formerly power sales representative in the southwestern district, Puget Sound Power & Light Company, Tacoma, has been named resident manager of the Enumclaw-Buckley territory which has been transferred from the central district to the southwestern district, with headquarters in Enumclaw, Wash.

Lieut. Charles W. France, during the World War a flying "ace" and for the past several years connected with the Mountain States Telephone & Telegraph Company, Denver, has severed his connection with that company to join the Western Air Express as division superintendent with headquarters at Denver.

A. E. Hitchner, manager of the Los Angeles office of the Westinghouse Electric & Manufacturing Company, recently spent a month at the company's headquarters in East Pittsburgh, Pa.

Succeeds A. M. Frost as Sales Mgr., San Joaquin Corp.

E. G. STAHL, since November, 1928, agricultural engineer for the San Joaquin Light & Power Corporation, Fresno, Calif., has been named to succeed A. M. Frost as sales manager of that company. Mr. Stahl brings to the position the benefit of ten years of specialization in rural electric problems and the application of power to agriculture.

Growing up in a farming community, he attended Kansas State University and was graduated as an electrical engineer. After service in France as a captain in the A.E.F., he joined the power company's organization as district manager at Los Banos in 1919. Two years later the San Joaquin dis-

E. G. STAHL

trict was formed and Mr. Stahl was transferred there as manager, a position he held for seven years until transferred to Fresno to fill the newly created office of agricultural engineer.

J. P. McElroy, field engineer and pump tester in the power sales department since 1925, has been appointed to fill the position left vacant by Mr. Stahl. **Phil Briggs,** head of the Fresno district service and meter department, has succeeded Mr. McElroy as field engineer and pump tester.

Allen G. Jones, manager, central station department, General Electric Company; **Ray W. Murphy,** Pacific Coast manager, Westinghouse Lamp Company; **John P. Coghlan,** assistant to the president, **W. G. Vincent,** vice-president and executive engineer, and **R. T. Stephens,** manager of electric sales, Pacific Gas and Electric Company; **A. Emory Wishon,** vice-president and general manager, Great Western Power Company, all of San Francisco; and **John B. Wilson,** president, Coast Counties Gas & Electric Company, Santa Cruz, Calif., were among the attendants from the Pacific Coast at the recent convention of the N.E.L.A. at Atlantic City, N. J.

James H. McGraw, chairman of the board of the McGraw-Hill Publishing Company, Inc., New York, was made the recipient of the honorary degree of doctor of commercial science by New York University at the commencement exercises held on June 12. The citation said: "Educator transformed into publisher, you have never ceased to be an educator. Your notable career accentuates that tendency in commercial life through which, however private in its form, its operations have a public character and become an element in public education."

Fred C. Foy, of the publicity department, San Joaquin Light & Power Corporation, Fresno, Calif., has been elected president of the Fresno Advertising Club for the year 1929-1930. **Lillian Broeker**, of the same company, will serve as secretary of the club.

L. E. Morse is secretary of The Washington Water Power Company, Spokane, and not secretary-treasurer, as erroneously stated in the June 1 issue of Electrical West.

Obituary

Charles F. Brush, inventor of the electric arc light, scientist, philanthropist and humanitarian, died at the age of 80 at his home in Cleveland, Ohio, on June 16. In 1879, the year following his invention of the arc lamp, the first street lighting system using this type of illumination was installed at the public square in Cleveland. Mr. Brush was decorated by the government of France as chevalier of the Legion of Honor in recognition of his discoveries in electricity. He was a fellow in the American Association for the Advancement of Science, American Academy of Arts and Sciences, American Geographic Society, North British Academy of Arts and the American Physical Society.

Arthur D. Goldsworthy, for the past 30 years secretary and manager of the Alameda Municipal Electric Light Office, Alameda, Calif., shot and killed himself in that city May 28. Mr. Goldsworthy had been ill for several months following a nervous breakdown.

Frank McKeen, assistant engineer in the City Light Department, Seattle, Wash., died in that city June 12 from injuries sustained in an attack made on him following an argument over the vacation of a road.

Henry W. Blake, senior editor of Electric Railway Journal, a McGraw-Hill magazine published in New York, died recently at the age of 64 after having served 38 years on that publication. For the past 35 years he had been its chief editor.

Meetings

Coming Events

American Institute of Electrical Engineers—Annual Pacific Coast convention in Santa Monica, Sept. 3-6, 1929.

Association of Electragists, International—Annual convention in Swampscott, Mass., Sept. 30-Oct. 4, 1929.

Camp Co-Operation IX—At Association Island, Henderson Harbor, New York, Aug. 2-6, 1929.

Illuminating Engineering Society—Annual convention at Bellevue-Stratford Hotel, Philadelphia, Sept. 24-27, 1929.

International Association of Electrical Inspectors, Northwest Section (formerly Northwest Association of Electrical Inspectors)—Annual convention in Vancouver, B. C., Sept. 9-11, 1929.

Southwestern Section (formerly California Association of Electrical Inspectors)—Annual convention in Sacramento, Calif., Sept. 18-20, 1929.

Radio Trade Show—In Civic Auditorium, San Francisco, Aug. 17-24, 1929.

Rocky Mountain Division, N.E.L.A.-Colorado Utilities Association—Joint meeting in Glenwood Springs, Colo., Sept. 9-11, 1929.

Los Angeles Electric Club Chooses New Officers

Results of the annual election of the Los Angeles Electric Club have been announced as follows: president—Frank J. Airey, district manager, Pacific States Electric Company; first vice-president — Roy Foulkes, manager, Foulkes Electric Company; second vice-president—H. W. Dennis, construction engineer, Southern California Edison Company; third vice-president—J. H. Pengilly, secretary-treasurer, Diamond Electric Manufacturing Company; secretary-treasurer—C. Thorburn, purchasing agent, Pacific Electric Railway Company; sergeant-at-arms—Dean T. Smith, division sales manager, Southern California Telephone Company.

In addition to the officials named, the executive committee consists of the following: C. A. Heinze, assistant general manager and assistant chief engineer, Department of Water and Power (retiring president); H. L. Masser, vice-president and executive engineer, Los Angeles Gas and Electric Corporation; A. E. Hitchner, district manager, Westinghouse Electric & Manufacturing Company; Hiram W. Allen, sales manager, Graham Reynolds Electric Company; and J. M. Cunningham, manager, central station department, General Electric Company.

State Utility Commission Engineers Confer

Among the subjects discussed at the seventh conference of state utility commission engineers held in Washington, D. C., May 31-June 1, were rural electrification, street lighting rates, electric service rules, and long distance manufactured gas transmission. Committee reports were presented on uniform types of rates and rate schedules, standard rural line construction, and depreciation.

A. G. Mott, chief engineer, California Railroad Commission, and G. W. Malone, state engineer of Nevada, were among the delegates who attended the conference.

Utah Power Engineers Hold Joint Initiation

At a joint meeting of the Salt Lake City and Ogden (Utah) branches of the National Association of Power Engineers, held recently in Salt Lake City, thirteen new members were initiated into the national association. John Topham of the Los Angeles association, and P. J. Buller, formerly of Salt Lake City, but now state deputy of California, had charge of the initiation ceremonies.

The speakers included Mayor Frank Francis, of Ogden, one of the initiates; Mr. Topham; Mr. Buller; J. B. Critchlow, president of the Ogden association, and Lew Asher, state deputy for Utah.

I.E.S., San Francisco Bay Cities Chapter, Elects Officers—The following officers of the San Francisco Bay Cities Chapter of the Illuminating Engineering Society were elected to serve for the year 1929-30 at a meeting of the society held June 14 at the Engineers' Club, San Francisco: president—Carl Martin, Benjamin Electric Manufacturing Company; vice-president, W. S. Hanbridge, Pacific Gas and Electric Company; secretary-treasurer—Charles L. Huyck, Graybar Electric Company. The board of managers elected consists of James Cravath, consulting engineer; Leonard Hobbs, The Edwin F. Guth Company; Roy Myers, Curtis Lighting, Inc.; and James Mundstock, The Frink Corporation.

Vancouver Electric Club Chooses Officers—At the recent annual meeting of the Vancouver Electric Club the following officers were elected for the ensuing term: president—T. H. Crosbie, manager, Vancouver branch, Canadian Westinghouse Company, Ltd.; vice-president—E. H. Adams, vice-president, B.C. Electric Railway Company; treasurer—B. W. Markham, Northern Electric Company; secretary—R. Hall, B.C. Electric Railway Company; the latter two re-elected for the second time. The directors include: S. E. H. Smith, A. C. W. Gage, A. G. Perry, George R. Wright, E. E. Walker, H. F. B. Brock, E. Johnson, W. C. Mainwaring, and John Reed.

Colorado Utilities to Meet in September—Announcement has been made by the Rocky Mountain Division, N.E.L.A., and the Colorado Utilities Association that they will hold their annual joint convention in Glenwood Springs Sept. 9-11, 1929.

Contractors, Dealers and Inspectors

Pioneer Los Angeles Motor Firm Reorganizes

THE Quality Electric Works, which was established in a small way in 1895 and incorporated in 1913, with S. M. Karicofe as president, announces the retirement of Mr. Karicofe. A. W. Wotkyns, secretary for many years, becomes the new president.

The newly elected officers and directors are: A. W. Wotkyns, president, secretary and treasurer; J. B. Martin, vice-president; and J. M. Bowden, director.

The Quality Electric Works specializes in power and lighting installations in industrial plants, and has many of the large installations in the Los Angeles territory to its credit. The firm also conducts a complete motor repair department in charge of J. M. Bowden. It has a large and well equipped shop, one of the best in the Southwest.

An interesting sidelight brought out in the reorganization is the fact that sixteen years ago this firm consisted of the president and secretary-treasurer and seven employees, and was doing an annual business of $20,000. Today the personnel includes 42 and the annual business amounts to $300,000. Many of the firms for whom work was being done in 1895 are still regular customers.

The engineering department consists of J. R. Wilson, a regular contributor to Electrical West; Ross Bartlett; and L. H. Ellett.

Stewart Electric Company, of Riverside, recently moved to larger and more attractive quarters at 639 Main St. Former location was 631 Main St., just next door to the present location.

LAURENCE DAVIS, manager of the Association of Electragists International, is scheduled for a flying trip to the Pacific Coast during the early part of July. His itinerary was announced recently by Clyde Chamblin, of San Francisco, president of the A.E.I.

Mr. Davis is to reach Los Angeles via El Paso on July 1 and to spend July 1, 2 and 3 in southern California. He will arrive in San Francisco July 4 for business conferences and visit central California July 5 and 6, returning to San Francisco, Sunday, July 7. He plans to be in San Francisco Monday and Tuesday, July 8 and 9, leaving for Portland Tuesday night. His stay in Portland will be only from July 10 to 11, arriving in Seattle for meetings on July 12 and in Spokane on July 13. From Spokane he has planned to leave directly for Chicago.

Plans are being made by Electragists in each locality to be visited by Mr. Davis for meetings of contractors and dealers. Several open meetings for all branches of the industry are also scheduled.

Mr. Davis brings with him important news as to the recent changes in policy and organization of the Electragists International.

The Berg Electric Company of Oceanside has moved into larger and more convenient quarters at 606 Second St. The electric store prides itself on having a complete line of up-to-date electric appliances.

High and Dry

When it came to eating the boys were crackerjacks in the dry contest held aboard the Southern California Electragist convention ship.

Double Signals Planned For San Francisco

Work has started in San Francisco on the installation of a double traffic control system for Market St. This system consists of two sets of signals, one for vehicles and another for pedestrians.

The double set is necessary, according to city officials, because of the interblock cross walks and the diagonal approaches on the north side of Market St. The signals were designed by Ralph Wiley, city electrician, whose previous signal system has been installed in San Francisco. The work of installation is also under the supervision of Mr. Wiley.

The timing of the signals was made the report of a special survey headed by Captain Charles Goff, head of the traffic bureau of the City Police Department. The report covers the speed of vehicles and traffic movement studies.

Novel Dues Procedure in Sacramento

THE Sacramento Association of Electrical Contractors and Dealers at a recent election of officers named J. B. Hawley, of Lupin & Hawley, as president for the ensuing year. Jack Kohl, of Waxon Bros., was named vice-president. George C. Foss was named secretary and C. Vorlander treasurer. Executive secretaryship was vested in the hands of Fred Church, field representative of the California Electragists in that territory.

The organization plans rather unusual procedure in the matter of meetings. Meetings are to be held semi-monthly on the first and third Wednesdays. Dues of $5 per month are assessed, $2.50 of which is rebated for each meeting attended. No excuses except sickness or absence from the city are acceptable. To provide finances to operate the association an assessment of 25 per cent of the inspection fee on permits for all knob and tube work and 50 per cent of inspection fees on all other types of work, is made. A 10 per cent discount is allowed on these operating dues if paid before the tenth of the subsequent month.

Luncheon meetings are held on alternate Wednesday noons for general discussion.

Two committees also were named at the meeting. Clifford Prudhomme was named chairman of the conference committee, with Carl Vining and E. T. Cook as members. A committee for industry contacts was named with Jack Kohl as chairman.

L. H. Ellett, formerly part owner of the **Electric Motor Service Company**, of Los Angeles, is now a member of the engineering department of **The Quality Electric Works** of the same city,

Vancouver Contractors Build Model Homes

MODEL Red Seal homes are going up in Vancouver at a fast rate. A number of electrical contractors have realized that this is an ideal way of winning the consent of their customers to installing the most modern electrical wiring system and of selling appliances. At present the Alma Electric Company, 3762 Tenth Ave., West, W. M. Bennett, 1516 Comox St., and the A. E. Richardson Electric Company are all building model homes.

These are located in the heart of the exclusive residential areas. The Alma Electric house is particularly outstanding. It is located at 3835 Twenty-fifth Ave., West, and in its seven rooms it has 138 electrical outlets. The Bennett home is a five-room bungalow at 3281 Thirty-first Ave., West, and the Richardson house, also a five-room bungalow, at 3028 West Fourteenth Ave.

The Small Homes Service Bureau of the B. C. Institute of Achitects is also erecting a model home in the University area. T. Smithers, 2821 Forty-second Ave., West, is installing Red Seal wiring. These homes are open for public inspection.

A List of Electrical Contractors in Los Angeles and vicinity who wired homes Red Seal in 1928 was made up recently by the California Electrical Bureau. The list included 100 electrical contracting firms in all. The contracting firm wiring the greatest number was the American Electrical Construction Company of Los Angeles with 133. Next came Jensen Electric Company, Long Beach, with 82; H. H. Walker, Los Angeles, with 52; R. N. Fry, Los Angeles, 24; Archie Simpson, Eagle Rock, 18; Baty Electric Company, Long Beach, 13; Claremont Electric Company, of Claremont, 11; Machtolf-Doll Electric Company, Glendale, 9; and Castor-Schief Electric Company, Whittier, 9. These of course include apartments in which each apartment is counted as one. Many, however, represent actual homes built.

H. K. Burdick, formerly estimator for **Newbery Electric Corporation,** Los Angeles, is now superintendent and estimator for **H. H. Obermiller,** of the same city.

The Collier Electrical Company, Denver, has moved to more spacious quarters at 1989 South Broadway, where it has a corner location.

Organized to engage in the electrical contracting business in Seattle, the **Vaughn Electric Company** has established an office and shop at 1521 Olive St., headed by **J. L. Vaughn.**

San Diego Electrical Contractors Organize—The San Diego Electrical Contractors Association is the name of a new organization recently formed by a majority of electrical contractors of San Diego County, Calif. O. W. Carl has been appointed secretary, with salary. It will be the object of this association to better wiring conditions and to provide a means whereby both the public, the general building contractor, and the electrical contractor may meet on a common ground to the advantage of all concerned.

The Queen City Electric Company of Denver recently finished the wiring of Denver's first Red Seal all-electric apartment. The building is at Fourteenth and Vine Sts., and contains twelve suites. In each apartment there are from 30 to 35 outlets. Each apartment is wired for ventilating fans, electric refrigeration and electric ranges.

Reminiscences

George Eldridge and Earle Brown had a secretarial smile for all.

Charlie Shipman of San Francisco was on deck, to be sure, for the Northern Division boat ride.

Airport Electric Company of San Diego did a very complete job of electrical wiring and equipment installation at the new San Diego hospital and clinic. The building is electrical throughout, including an electrical kitchen, an electrical laundry, electric refrigeration, electric ventilation, a physicians' auto-call chime system, patients' silent call system, physicians' register system, radio outlets in every room, an emergency lighting system through an automatic switching equipment, a complete fire alarm system and elevator equipment.

A Fox Pass?

Frank Gentles, of Alta, tells H. C. Reid all about the Fox job.

Northwest I.A.E.I. Plans Program of Notables

The program of the convention of the Northwest Section, International Association of Electrical Inspectors, to be held in Vancouver, B. C., Sept. 9-11, 1929, is in process of formation. In so far as it has been definitely arranged at this time, it includes the following well known men among those who will make addresses on important subjects:

R. L. Laing, fire marshal, Seattle; Dr. M. G. Lloyd, engineer, Bureau of Standards, Washington, D. C.; H. B. Kirkland, secretary, Society for Electrical Development, New York; W. S. Boyd, secretary, Western Section, I.A.E.I., Chicago; V. H. Tousley, secretary, N.F.P.A., Chicago; J. C. Forsyth, Board of Fire Underwriters, New York; B. S. McKenzie, secretary, Canadian Engineering Standards Committee, Ottowa; and A. Penn Denton, N.E.M.A., New York.

Many of these men also plan to attend the Southwest Section meeting in Sacramento, Sept. 18-20.

Plans for the proposed ornamental street lighting system for the business district of Walla Walla, as prepared by the engineering department of **Ne Page-McKenny Company,** of Seattle, have been approved by the city commission. The system is estimated to cost $13,298.98, and provides for eight standards in each block, with two 600-cp. 6,000-lumen Mazda C street series lamps on each standard. This would give the business district nearly five times the light it is now getting.

Seattle Drafts New Code—After four years of study and research, the Seattle wiring and electric code has been redrafted and modernized. Following its check for legality, the new code will be published.

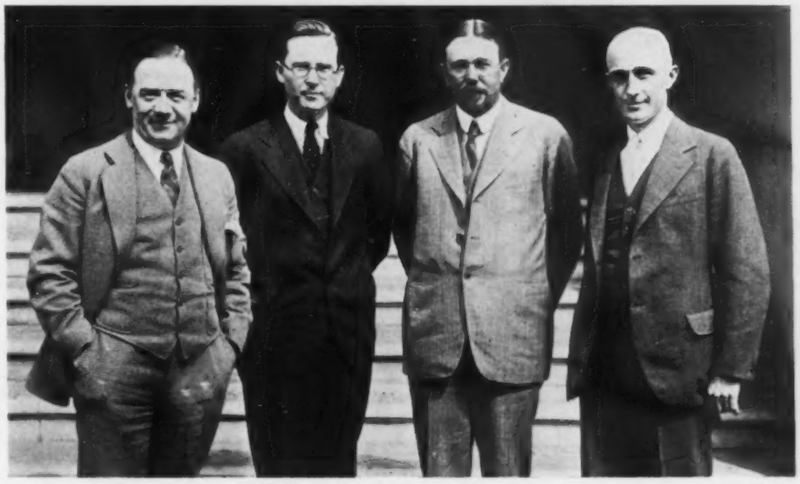
Manufacturer & Distributor

Joslyn Company Plans Los Angeles Factory and Opens San Francisco Office

THE Joslyn Company of California, formerly the Detrick-Joslyn Company, has announced that it will begin work immediately upon a pole-line hardware factory and warehouse in the central manufacturing district of Los Angeles, which will represent a total invested capital of more than $400,000 in land, building and equipment. The first unit is scheduled for completion by Aug. 1.

The company has opened a San Francisco office and warehouse at 175 Russ St. R. G. Holabird, formerly with the Graybar Electric Company, has been appointed manager of this office. The opening of the San Francisco office came as the result of the retirement of C. G. A. Baker, of the Baker-Joslyn Company, and the purchase of the jobbing business of that company by Listenwalter & Gough, Inc. The Detrick-Joslyn Company has been representing many of the same manufacturers in southern California territory so its entry into the San Francisco territory is a natural development. The policy of distribution of these lines will be on a basis of sales through electrical jobbers.

The Joslyn Company of California, of which M. L. Joslyn is president and H. S. Detrick vice-president and general manager, is the California distributor of the products of the Joslyn Manufacturing & Supply Company of Chicago, together with a number of other well-known lines of electrical, transmission and pole line hardware and fittings.



Officials of the Josyln Manufacturing & Supply Company, of Chicago, with H. S. Detrick, conferring in Los Angeles at the time when plans were being made for the building of a factory in that city by the Joslyn Company of California. *Left to right*: B. S. Handwork, vice-president, Burton Smalley, factory manager, and M. L. Joslyn, president, of the Joslyn Manufacturing & Supply Company, and H. S. Detrick, vice-president of the Joslyn Company of California.

The McGraw Electric Company, Omaha, Neb., has purchased the business of **Waters-Genter Company,** Minneapolis, and the **Bussmann Manufacturing Company,** St. Louis. The Waters-Genter line of electrical appliances includes the Toastmaster and the Thermotainer food preserving unit for hotel and restaurant use. The Bussmann company's line consists of adjustable bed and table lights as well as electrical fuses.

Distributes Meadows Washers in Southern California—The Southwest Agencies, Inc., 120-124 South Central Ave., Los Angeles, is the distributor for the Meadows washing machine in southern California. Boyd H. Fuller, for the past year in charge of the Los Angeles wholesale sales of General Electric refrigerators and for four years prior to that in charge of the southern California territory for the Easy washer, is manager.

Frigidaire Appointments on West Coast Announced

J. L. Conover, formerly branch manager of the Minneapolis district of the Frigidaire Sales Corporation, has been appointed Pacific Coast manager for that company. He will direct the activities of the five Pacific Coast branches, Seattle, Portland, Oakland, Oakland Provincial, San Francisco and Los Angeles, whose territory includes Washington, Oregon, California, parts of Nevada and Alaska. Mr. Conover will maintain his headquarters at 513 Ray Building, Oakland.

Announcement also has been made of the appointment of T. G. Supplee as public utility representative of the Frigidaire Corporation on the West Coast. He will direct the public utility work in Washington, Oregon, California, Utah, Idaho, and Nevada, and will maintain headquarters in the Oakland office with Mr. Conover.

Walker Brothers Establish Pacific Coast Offices—Walker Brothers, of Philadelphia and New York, manufacturers of conduit, have announced the appointment of Hal Lauritzen as Western manager, with offices at 938 Russ Building, San Francisco. Mr. Lauritzen will have charge of sales in all the Western states with the exception of Colorado. Offices have also been established in Los Angeles, Portland and Seattle. F. E. Walker, vice-president of Walker Brothers, spent the past month on the Pacific Coast in the interests of his company.

Majestic Company Appoints Eastern Manager—The Majestic Electric Appliance Company, Inc., San Francisco, has appointed Arthur Kempston, formerly manager of the Apex Manufacturing Company, Oakland, Calif., as its Eastern manager with headquarters in Philadelphia. Mr. Kempston will have jurisdiction over all territory east of the Mississippi River in the distribution of the Majestic company's products.

American Brown Boveri Company, Inc., Names President—George A. Burnham, president of the **Condit Electrical Manufacturing Company,** Boston, has been made president of the American Brown Boveri Company, Inc., of Camden, N. J., a newly formed subsidiary of the American Brown Boveri Electric Corporation, which has been created for the purpose of placing all electrical and mechanical operations, exclusive of shipbuilding, under one management. American Brown Boveri Company, Inc., owns the entire capital stock of the Condit Electrical Manufacturing Corporation, but the latter company will continue to manufacture and sell its products through its own organization.

Work Begun by Reorganized Divisions of N.E.M.A.

Formal approval has been given by the board of governors of the National Electrical Manufacturers Association to the organization of N.E.M.A. divisions each composed of a number of sections made up of manufacturing industries having related interests.

The divisions which have already been organized and are now formally approved are the appliance, insulating material, radio, refrigeration, transmission and primary distribution, utilization and control, wiring devices and wiring materials divisions. An industrial heating division and a lighting division have also been authorized.

Industry statistics are to be collected by the refrigeration division by means of questionnaires sent to member companies on manufacturers' production and dealers' sales. This division, which is divided into domestic refrigeration and commercial refrigeration sections, also will co-operate with the Department of Commerce in the collection of dealer's sales figures. A comprehensive list of dealers in electric refrigeration in the United States now is being prepared by the division.

Refrigerator manufacturers who already have joined the N.E.M.A. refrigeration division are the Absopure Refrigeration Corporation, Climax Electric Refrigeration Company, Copeland Products, Inc., Dole Refrigerating Machine Company, General Electric Company, Holmes Products, Inc., Kelvinator, Corporation, Norge Corporation, Peerless Ice Machine Company, Servel, Inc., Universal Cooler Corporation and Westinghouse Electric & Manufacturing Company.

Sales Manager of Stubbs Electric Company Appointed—Roy E. Dryer, until recently Northwest representative of the Bryant Electric Company, with headquarters in Seattle, has been appointed sales manager of the Stubbs Electric Company, Portland, filling the position made vacant by the death of B. E. Lucas. Prior to his residence in the Northwest, Mr. Dryer spent twenty years in California, where he was connected with the Graybar Electric Company and the Bryant Electric Company in San Francisco.

G. E. Company to Furnish Turbine for Second Unit of Shuffleton Plant—The General Electric Company, Seattle, has been awarded contract by the Puget Sound Power & Light Company to furnish a 50,000-kw. turbine to be installed in the second unit of the company's Shuffleton steam plant near Renton, Wash.

The Tilden-Kienly Company, 545 Sutter St., San Francisco, has been appointed northern California representative by **The Laundryette Corporation,** Cleveland.

No Fakee—Turn Aboutee—You Sell 'um—I Sell 'um

MRS. FONG, China lady who run big restaurant in Honolulu, catch 'em Hotpoint electric range sold by George A. Hughes, president of Edison Electric Appilance Company, Inc., who go Hawaii for vacation, and maybe sell a little on side. Mrs. Fong, smart woman—don't buy range till she sell Mr. Hughes six barrels rice. Then everybody happy.

Acorn Heater Corporation Changes Name—The name of the Acorn Heater Corporation, Bridgeport, Conn., has been changed to **The Electric Heater Corporation.**

The Frink Corporation, San Francisco, manufacturer of lighting specialties, has appointed Perry Hoffman, Paulsen Building, Spokane, as its agent in eastern Washington. Howard C. Ross, 1345 East Willetta St., Phoenix, Ariz., will represent the Frink Corporation in Arizona and New Mexico.

Acquires Powerlet Line—The Appleton Electric Company of Chicago has purchased from the **Jefferson Electric Company** of that city the complete Powerlet line, including threaded and threadless conduit fittings and entrance fittings and everything pertaining to those lines.

The Reliance Electric & Engineering Company, Cleveland, has appointed the **Utilities Equipment Corporation** as its representative in California and Arizona. The **Mountain States Machinery Company,** Denver, will represent the Reliance company in Colorado.

Paul R. Prietsch, for a number of years manager of the miniature lamp department of the Westinghouse Lamp Company, San Francisco, has been appointed general manager of Gordon Prentice Inc., Seattle, distributor in western Washington of General Electric refrigerators.

James T. Barrett, manager of the radio department of Listenwalter & Gough, Inc., San Francisco, and **Charles G. Walter,** manager of the company's radio department in Los Angeles, attended the Radio Trades Show held in Chicago June 3-7.

Allied Industries in Los Angeles

NEW warehouse and office building recently erected at 451 South Hewitt St., Los Angeles, by Allied Industries, Inc. A full line of conduit and fittings and other equipment for which the company acts as distributor is carried in stock at this new southern California headquarters. The building is heated electrically throughout by means of three 4-kw., one 2-kw. and one 1½-kw. Wesix built-in heaters. A display room just off the main office is used to show Christmas tree sets, small air heaters, small ranges, and bells, horns and gongs for home and industrial signal use An interesting method that has been devised for storing conduit in this warehouse is described elsewhere in this issue of Electrical West.

New Equipment

Health Exerciser

The Johnson health exerciser for reducing, massaging and stimulating circulation, has recently been placed on the market by the **Johnson-Washer**

Company, Fortieth and Adeline Sts., Oakland, Calif. The exerciser has a ¼-hp. motor and can be adjusted for four variations of strokes or speeds: (1) very mild, (2) gentle, (3) brisk, and (4) rapid. A narrow and a wide belt are provided with each exerciser; hand grips and stand may be purchased separately. The table model illustrated is finished in gold with a light tan undercast, and retails for $69.—Electrical West, July 1, 1929.

Waffle Iron

A recent addition to the appliance field is this waffle iron manufactured by the **Eagle Electric Manufacturing**

Company, 59 Hall St., Brooklyn, N. Y. It is Catalog No. 325 and the list price is $10.—Electrical West, July 1, 1929.

New Easy Washers

Two new Easy wringerless washers, Models "D" and "U," have been placed on the market by the **Syracuse Washing Machine Corporation,** Syracuse, N. Y. In model "D" the agitator principle is employed for the first time in an Easy washer. The vacuum principle used previously in all Easy washers, is retained in the new model "U."

The new machines are smaller in size than former models. A new hose and nozzle water control system replaces the former mechanical valve control system. The drain board has been combined with the dryer cover, in order to shorten the machine and simplify the design.—Electrical West, July 1, 1929.

Automatic Bread and Sandwich Toaster

The Jack-in-the-Box 400-watt automatic toaster for toasting either bread or sandwiches has been announced by **The Armstrong Electric & Manufactur-**

ing Corporation, Huntington W. Va. In it bread or sandwiches are toasted by the "flat" method, and both sides are toasted at once in less than two minutes. To operate, the bread or sandwich is placed on the rack, the time lever is set and the lid closed. When toast is done the lid opens and toast or sandwich is easily removed. Retail price $12.50.—Electrical West, July 1, 1929.

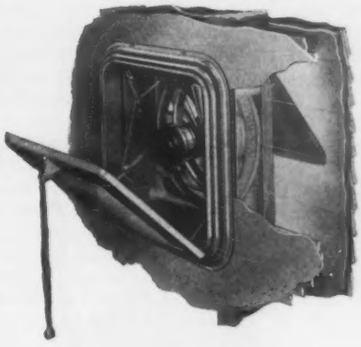
Inside-Colored Sign Lamp

For use in the theatrical, sign and decorative fields, the **Westinghouse Lamp Company,** New York City, has announced the addition of the 15-watt, 110-, 115- and 120-volt, A-17 bulb, Mazda lamp to the sizes that have been previously supplied with inside coloring. The 15-watt, inside-colored lamps are now available in standard voltages, in all standard colors, including ivory and old rose.

The 10-watt, 3¼ bulb sign lamp, already available in standard inside colors and in ivory and old rose, is now also available in inside white. These two lamps will be supplied at the same prices as apply to corresponding wattages and colors of the outside coated lamp.—Electrical West, July 1, 1929.

Built-in Ventilating Fan

For kitchen ventilation the **Buffalo Forge Company,** Buffalo, N. Y., has recently placed on the market the Breezo wall box and ventilating fan. The telescopic box is made to fit walls



of any thickness from 5¾ to 16 in. and is easily installed. The manufacturer's announcement states that the fan has blades set at just the right angle to handle a large volume of air at comparatively low speed, thus assuring quiet operation. Motor is fully enclosed and needs only to be connected to the house current. Opening of the louver doors automatically starts the fan. The louvers are operated by a lever in the inside door of the box, so arranged that a constant tension is maintained, and when the louvers are closed they are air-tight and rattle-proof. The fan in operation uses about the same amount of electricity as a 50-watt lamp. Electrical West, July 1, 1929.

Table Tap

A sturdily constructed table tap with four outlets has recently been placed on the market by the **Beaver Manufacturing Company,** Newark, N. J. The tap

is made of Bakelite, diamond-shaped. A choice of color combinations, and also solid colors, is offered, with matching silk cord and handle cap. The intended retail price is $1.25.—Electrical West, July 1, 1929.

Armored Cable Fitting

A new connector, known as the ABC No. 2163, so designed as to permit bushing to show through gaps at the end, has been developed by the **National Electric Products Corporation,** Pittsburgh, Pa., for use with the new A.B.C. armored cable.

Other improvements in this new fitting are the longer barrel and the EZ clamp strap. This is one-half of the large unthreaded end that fastens the cable; it is split, hinged on one side, and has a big screw on the other. In operation the clamp part comes down uniformly and smoothly on the cable without twisting the steel out of shape or

bearing on any one particular point and thus distorting the steel. This type of clamp makes it impossible for cable to jump out from its position, according to the manufacturer.

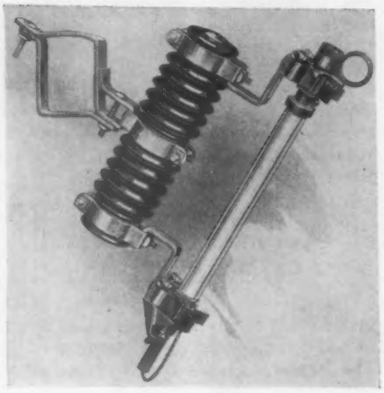
Bondnuts instead of locknuts are used on this connector. The sharp bonding spurs dig into the side of the box through the enamel and form a definite metal bond, and the bondnut grips tight and will not loosen under any condition. Threads of screws, inside of the fitting as well as the outside are sherardized, and therefore rustproof. — Electrical West, July 1, 1929.

Fuse Pullers

A new line of ideal laminated fiber fuse pullers, made in four different sizes, has been placed on the market by the **Ideal Commutator Dresser Company,** Sycamore, Ill. The Midget size is 5 in. long with three laminations and has gripping jaws on one end; it is for handling small fuses, grid leaks, etc., ¼ to ½ in. in diameter. The Pocket size, 7½ in. long with 5 laminations, is for fuses 0-200 amp. 250 volts and 0-100 amp. 600 volts. The Giant size, 12 in. long with seven laminations, is for fuses 100-600 amp. 250 volts, and 60-400 amp. 600 volts. The Jumbo size, 20 in. long and with nine laminations, is for handling fuses 200-800 amp. 250 volts, and 200-600 amp. 600 volts. Prices vary from 35 cents to $11.50 each according to size desired.—Electrical West, July 1, 1929.

Switching Equipment

A complete line of 7,500, 12,000 and 15,000-volt rural line fuse switches, disconnect switches, fuse switch-choke coil combination, and disconnect-choke coil combination switching equipment has



been announced by the **James R. Kearney Corporation,** 4224 Clayton Ave., St. Louis, Mo.

These new one-piece porcelain rural line switches are especially designed to cut installation and maintenance costs. Any switch can be used either as a fuse or disconnect by interchanging the blade or cartridge on the same switch. The one-piece porcelain used is fog type, having exceptionally high wet and dry flashover. The switches have hot-dipped galvanized iron parts. Resilient inserts are placed between the porcelain and metal rings to eliminate spot loading on porcelain.

This type of switch is small and compact, taking a minimum amount of space on the crossarm. A universal crossarm hanger is supplied with each switch—this one hanger being for use on any standard crossarm by adjustment. Standard cartridges and blades are supplied on all equipment.—Electrical West, July 1, 1929.

Across-the-Line Starter

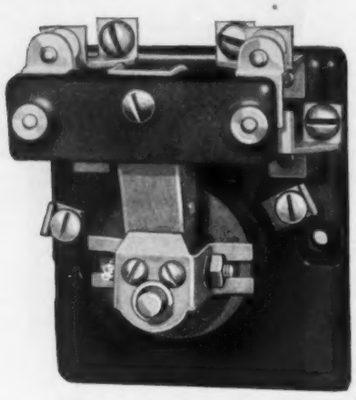
An improved starter which starts a motor directly across the line has been placed on the market by **The Lincoln Electric Company,** Cleveland, Ohio.

Ease of installation, extreme accessibility to all operating parts and rugged construction are some of the advantages offered in the new starter. Only four screws are required to hold the starter in place. Releasing two other screws permits the contactor panel to swing out, thus making lead contacts easily accessible. A cover of the drop hinge type encloses the entire mechanism and permits installation of starters closely grouped, 2-in. clearance between starter boxes being ample for easy accessibility. —Electrical West, July 1, 1929.

A.C. Contactors

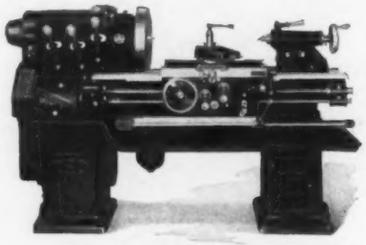
The **Allen-Bradley Company,** 286 Greenfield Ave., Milwaukee, Wis., announces a new line of small a.c. contactors for electric ranges, water heaters, steam vulcanizers, fire alarms, oil burners, refrigerators, traffic signal systems, and other applications requiring an automatic control switch of small capacity.

These switches can be provided for operation on 6, 12, 24, 110, or 220 volts, and for any frequency from 25 to 60 cycles. Current ratings range from 15 to 30 amp. Two-wire or three-wire



control can be used with any type of pilot control device. The contactors (bulletin 701) can be provided with steel enclosing cabinets, if desired.—Electrical West, July 1, 1929.

High-Speed Lathe



The **Monarch Machine Tool Company,** Sidney, Ohio, has developed a new line of Timkenized lathes in sizes from 14 to 36-in. swing, providing maximum spindle speeds of from 600 to 1,500 r.p.m. These high-speed lathes are especially designed for use with the new tungsten-carbide cutting tools, for which twice the amount of power is required as for steel tools, according to the manufacturer. The lathes may also be used at the slower speeds when cutting tools of ordinary high-speed steel are used.—Electrical West, July 1, 1929.

Fuse Tester

A voltage and fuse tester of watch-case size, known as the Johnson fuse tester, is being placed on the market by the **Electric Tester Manufacturing Company,** 346 Sherlock Building, Portland, Ore.

The tester is designed to eliminate the hazards and uncertainties connected with the usual methods of locating blown fuses, dead sockets, short circuits and grounds, and it can be easily and safely used by anyone.

The device consists of a resistor coil enclosed in a heat-resistant and non-conducting circular case, 2¼ x 1 in. in size. A 6.2-volt indicating lamp burns dimly at 100 volts and brightly at 250 volts. It may be had with stiff, 6-in. leads for general use, or with 18-in. flexible leads with an insulated clasp for electricians' use.—Electrical West, July 1, 1929.

Wire Stripper

A new tool known as the Ideal "E-Z" wire stripper is being marketed by the **Ideal Commutator Dresser Co.,** Sycamore, Ill. This wire stripper requires no "cocking" or setting. A triplicate action of clamping the wire, cutting the insulation and stripping is automatically timed and performed with one squeeze on the handle. The "E-Z" stripper is available in two sizes: No. 1 is for No. 22-No. 12 wire sizes, and No. 2 for No. 18-No. 10 wire sizes. The list price of both models is $5.—Electrical West, July 1, 1929.

Fans in New Colors

In accordance with the modern trend toward equipment and accessories in color, the merchandising department of the **General Electric Company,** Bridgeport, Conn., is offering G. E. electric fans finished in duco in fawn, mediterranean blue, jade green, forest green with yellow blades, colonial ivory, and black with ivory blades. Fans in color are $1.50 net each more than standard prices in lots of 25 or more. There is no additional cost for the standard forest green model.—Electrical West, July 1, 1929.

New Simplex Iron

A new electric iron finished entirely in chromeplate has been announced by the Simplex Division of the **Edison Electric Appliance Company, Inc.,** Chicago. This new iron has a green Bakelite handle, said to be exceedingly comfortable and so constructed that it protects the fingers from possibility of burning. A three-deck, reversible, non-scorching separate stand is included.—Electrical West, July 1, 1929.

Recent Publications

Industrial Signals—Benjamin Electric Manufacturing Company, Des Plaines, Ill., has published two illustrated booklets on industrial signals. One is entitled "The Industrial Howler" and is devoted principally to the motor-driven howler. The other, entitled "Make Your Signal System Effective," shows a number of specific applications of Benjamin industrial signals.

Floodlighting—Three recent publications of the **Crouse-Hinds Company,** Syracuse, N. Y., Bulletins No. 2127, 2130 and 2132, are entitled, respectively, "Gasoline Service Station Lighting," "Sunbeams in the Night," and "Airport and Airway Lighting Equipment."

Electrically Heated Coating Tanks—"Falcon" electrically heated large asphaltum coating tanks manufactured by **H. O. Swoboda, Inc.,** Pittsburgh, Pa., are described in Bulletin No. 160 recently issued by that company.

"Celite for Concrete"—This is the title of a new 24-page booklet being distributed by the **Johns-Manville Corporation,** New York, describing the new product recently added to the Johns-Manville line.

"Standard Wiring Symbols for Buildings"—A new edition of this chart is being distributed by **The Bryant Electric Company,** Bridgeport, Conn. Copies of the chart may be obtained by request to the company.

Color Lighting in Theaters—Bulletin No. 77 of the **Reynolds Electric Company,** 2669 West Congress St., Chicago, describes that company's Reco color lighting equipment for use in theaters as well as color hoods for cove lighting and colored floodlights.

Air-Jacketed Motors—Bulletin No. 151, third revision, issued by the **Wagner Electric Corporation,** St. Louis, Mo., contains a discussion of dust, fume and moisture problems and the construction features that protect Wagner motors from these elements.

"Airport Illumination"—This is the self-explanatory title of publication GEA-982A issued by the **General Electric Company,** Schenectady, N. Y.

Rural Load Building—The Prater Pulverizer Company, Chicago, has issued two bulletins on its electrically-driven feed grinder. The first is "A Rural Load Building Plant for Central Stations," and the second is "A Sales Manual for Rural Service Departments of Central Sttaions." A semi-monthly bulletin entitled "Building the Rural Load," is issued by the Prater company's recently organized merchandising service division.

Pyrometer for Type Casting Machines—A new type FD pyrometer manufactured by the **Roller-Smith Company,** 233 Broadway, New York, is described in supplement No. 1 to Bulletin No. 400 recently issued by that company. The specific application of the device is the indication of the temperature of molten type metal.

Waterwheels—Bulletin No. W203, issued by **The James Leffel & Company,** Springfield, Ohio, describes Leffel open penstock waterwheel installations with submerged type gate operating mechanism.

Choke Coils and Fuse Mountings—The Champion Switch Company, Kenova, W. Va., is distributing Bulletin "F," describing its new line of outdoor reinforced choke coils, fuse mountings and combined choke coils and fuse mountings.

Ornamental Luminaires—Booklet No. 900 recently issued by the **Holophane Company, Inc.,** 342 Madison Ave., New York, is a catalog of Holophane ornamental luminaires for all purposes.

Westinghouse Publications—Recent publications issued by the **Westinghouse Electric & Manufacturing Company,** East Pittsburgh, Pa., include the following:

Circular No. C11824, on the Type O line of oil circuir breakers.

Reprint No. 357, entitled "A History of the Development of the Single-Phase System."

Leaflet No. 20408, on the Class 13-100 non-reversing magnetic starter for wound rotor induction motors.

Leaflet No. 1101-D, on the Type MC mill motor enclosed and the Type MCO open motor.

Leaflet No. 20401, on Type AD mechanical drive turbines.

Catalog No. 224, a 64-page booklet entitled "Westinghouse Panelboards."

Circular No. 1799, on the Type O-241 oil circuit breakers.

Leaflet No. 20403, on the Class 11-210 reversing line starters for squirrel-cage induction motors.

Leaflet No. L.1150-C, on Types G and HG high-speed synchronous motors.

Leaflet D.M.F. No. 5154, on multiple retort underfeed stokers.

Leaflet No. 20405, on unbreakable terminal blocks.

Leaflet No. 20379, on truck type switchboards and switching equipment.

Special Publication No. 1724-A, a 16-page booklet entitled "Modern Power Transformers."

ELECTRICAL WEST Barometer of Industrial Activity in Western States

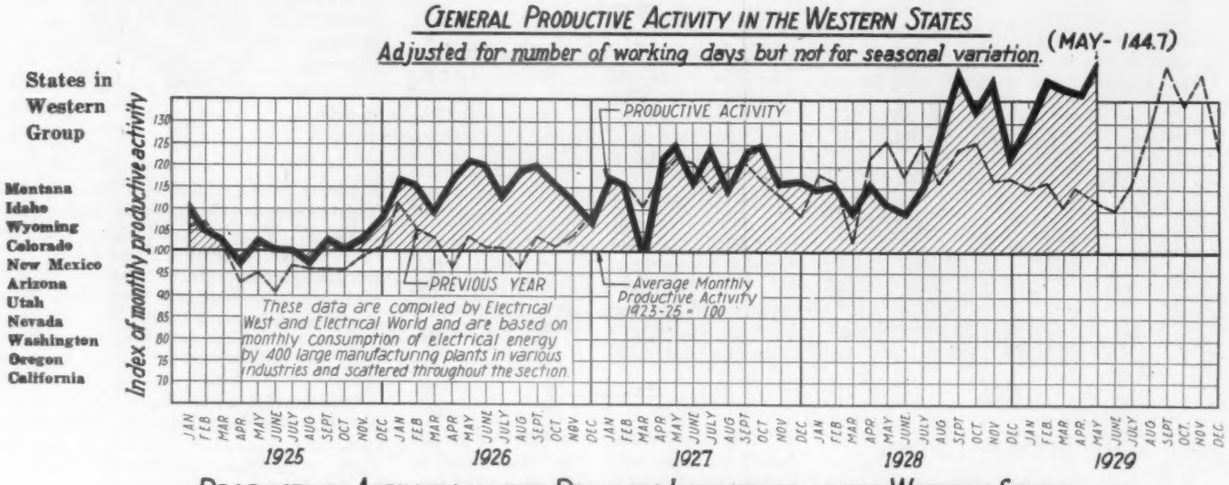
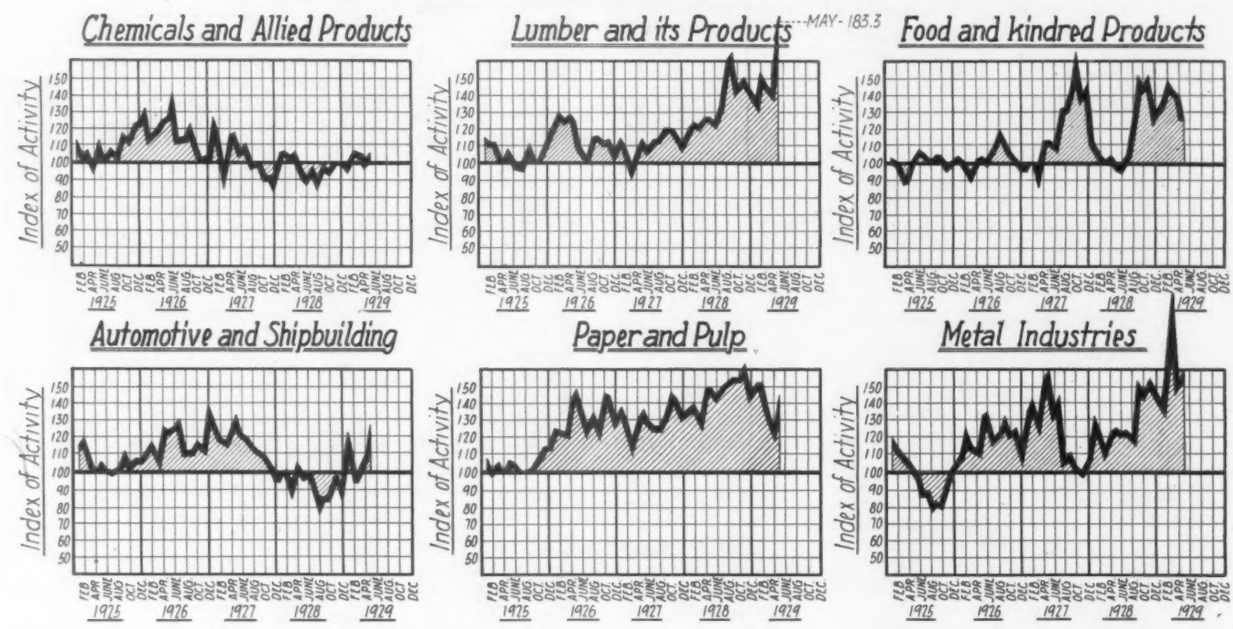
IN LINE with general manufacturing conditions in the country as a whole, the manufacturing plants of the Western states reported a new record in rate of activity during May. The rate of operations in the section during this month was 5.6 per cent over April, 28.1 per cent over May last year, and 0.9 per cent above the previous high mark set in September last year.

The lumber industry of the Western states set a new high record during May for rate of operations. The May activity in these mills was 22.5 per cent over April, 43 per cent over May last year, and 12.5 per cent over the previous high rate of operations in the industry set in September last year. The operations in the food and kindred products industry during May witnessed a drop of 10.4 per cent under April, a drop in rate of activity of more than seasonal proportions, but to be expected by reason of the unusually high plane upon which the industry has been operating since the opening of the year. The current May operations, however, were still 28.8 per cent over May last year.

General manufacturing operations in the United States in May, corrected for seasonal variation, and based on electrical energy consumption, were by far the highest on record, surpassing the previous high monthly rate, which occurred during the previous April, by 3.3 per cent. The May rate, not corrected for seasonal variation, was 0.4 per cent above April, but was 2.6 per cent under the peak of general productive operations reached in February. Compared with May, 1928, the current operations were on a plane 15 per cent above May last year. The first five months of the current year have witnessed an average rate of manufacturing activity 13.2 per cent over the same period in 1928.

Every section of the country reported a May rate of operations materially over May last year, the Western states leading with a gain of 28.1 per cent.

Indexes of Industrial Activity in the Western States

(All figures adjusted for number of working days.)

	May 1929	Apr. 1929	May 1928	Av. 1st 5 Mo. 1929	Av. 1st 5 Mo. 1928
All industry	144.7	137.0	117.9	138.5	114.5
Chemical and allied products	103.1	97.6	90.0	98.0	102.6
Food and kindred products	125.4	140.0	97.4	139.1	104.1
Forest products	183.3	150.4	128.2	154.4	124.2
Metals group	160.0	153.2	124.0	165.8	123.4
Paper and pulp	146.7	129.0	150.0	143.0	141.4
Rubber and its products	196.3	198.1	133.7	199.3	125.6
Shipbuilding	127.0	109.2	94.2	109.2	96.1
Stone, clay and glass	130.8	145.3	154.5	135.4	154.1